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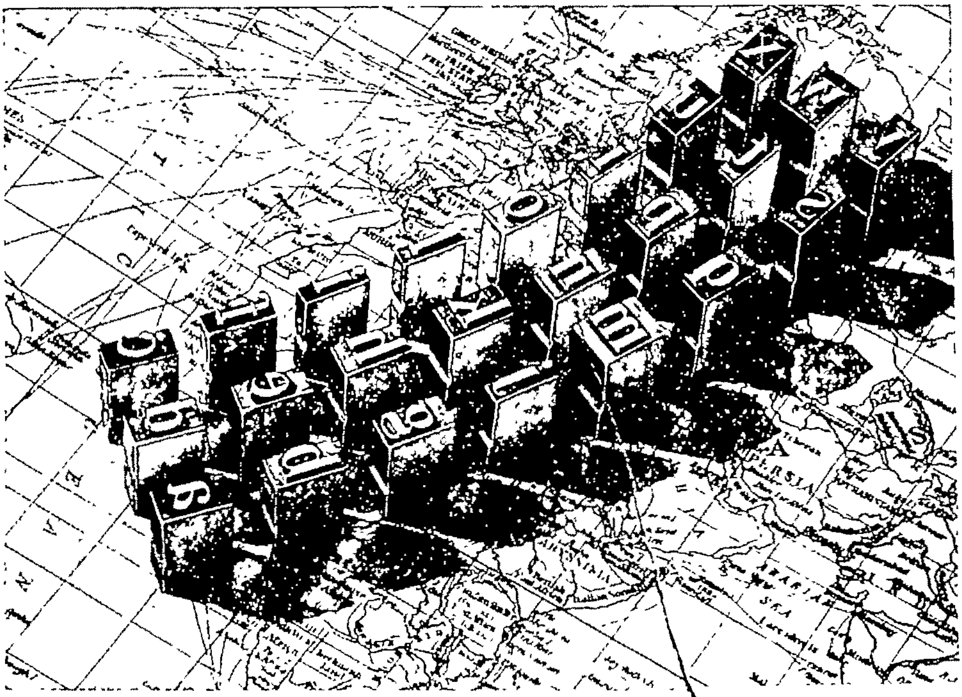

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ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 9 **January 1957** **Number 1**

INTRODUCTION

THOUGH the title on our cover implies no startling novelty, this first issue of *Aslib Proceedings: incorporating Aslib Information* is, nevertheless, a step of some significance in the publication of Aslib's periodicals. From now on, the quarterly *Aslib Proceedings* and the members' monthly news-sheet *Aslib Information* will cease to be published separately. Instead, the papers, news notes, lists of recent articles and Aslib library accessions which have hitherto appeared in them, together with certain other types of material for which Aslib has had no suitable publication medium, will be brought together in this new monthly periodical. This, as befits a record of papers read at Aslib meetings and a chronicle of the plans and activities of all of Aslib's component parts, is visualized as a service common to members of all categories and one of the principal links between them.

Many factors have influenced the change. In particular, the expansion of branch and group activities postulates a frequent medium for up-to-date news about them. Limitations of space in *Aslib Information* and three-monthly intervals between issues of *Aslib Proceedings* made neither of these entirely suitable. Statements of Aslib's policies could never be adequately conveyed within the confines of the monthly bulletin. Nor was there room for the exchange of views through correspondence columns. Space for readers' letters will still be limited but we shall be pleased to consider for publication letters on matters of general interest to members, and it is hoped that correspondence will become a regular feature of the new journal.

This first issue contains two papers, by Dr. J. C. Gibbings and Miss Jean Binns, based on a joint contribution which they made at the Aslib Aeronautical Group Conference held at the College of Aeronautics in April, 1956. Lack of space prevented their publication in the 1956 volume of *Aslib Proceedings* but we are very glad to be able to present them now.

E. M. R. DITMAS,
Editor.

PRINCIPLES OF PLANNING ACCOMMODATION FOR TECHNICAL LIBRARIES

BY J. C. GIBBINGS, PH.D., A.M.I.MECH.E.

Royal Aircraft Establishment, Bedford

Aslib Aeronautical Group Conference, 6th–8th April, 1956

OBJECTS OF LIBRARY

IN this paper we are to discuss library accommodation, relating it to the services that management and staff require of its libraries. So there are two main objects in presenting this paper to a joint meeting of librarians and management.

(*a*) It firstly gives management an opportunity of discussing the services it requires of libraries. Here, of course, we acknowledge the fact that though management and staff are the customers (and should always be so regarded by librarians), it often happens that the customer does not always know what is available, nor even sometimes what is best for him.

(*b*) The second object in presenting this paper is that it gives librarians an opportunity to discuss the accommodation required to provide those services.

It is considered important that management should take an active interest in this matter, for the arrangement and quality of accommodation greatly affects the service that the library provides. Also modification or increase in it often entails an expense that must be sanctioned by management.

It might be thought that these matters are of academic interest to the majority of librarians here, because their libraries already exist. Firstly, this is, of course, a selfish attitude, inconsiderate to those few librarians who will benefit from our discussions; secondly, the time to give detailed consideration to the planning of a library is not when a library is wanted, then it is too late; and finally, there are probably many existing libraries which can be improved in minor detail.

Before planning a library one must have a clear idea of the objects that it shall perform. Thus it is appropriate that we should now discuss the objects of a technical library. These objects will often be laid down by the management, but whether this be so or not they should always be jointly discussed and agreed by the management and the librarian.

The following four objects are not suggested as hard and fast rules but are suggested as a guidance and as a basis for the subsequent discussion.

1. The library should provide users with information as requested. This is the usual 'information desk' type of service.
2. The library should provide users with new information as soon as it becomes available, even though it be unknown to the user. That is, it must be a live and vigorous source of information.

3. The library should give facilities for browsing. The member of a technical staff needs to keep abreast of knowledge in adjacent classes of science and to store up knowledge in his brain for possible future use as well as relying on the library.
4. The library should build up a safe store of information for possible future needs of its customers. There are two points here that bear directly upon library planning. The first is that the decision on the amount of stock to be held, together with its rate of increase, directly affects the size of the accommodation and the amount of equipment required, and the second point is that the accommodation and equipment should provide a reasonable safety against theft. Particularly is this so if militarily classified information is to be held.

It is not suggested that these four objects have been placed in order of importance; for instance, the last item is not necessarily the least important, but it is not, on the other hand, the most important in the technical library of a firm or establishment.

Then in planning a library one should also consider two main viewpoints. They are:

(*a*) The organization of work in the library;

(*b*) the convenience of the library user.

Finally, a decision has to be made as to the amount to be spent on a library. This is a difficult decision for management to make and depends largely upon intuition and upon experience in any particular organization. No definite advice in the form of a total figure generally applicable can be given, except to say that expenditure sufficient to attain the previously enunciated four objects should be a guide.* Also, it might be mentioned that, certainly as far as expenditure on material things goes, there is not necessarily a direct relation between expenditure on a library and its value to the organization.

There is a greater need to discuss the general principles of accommodation rather than its finer details, because most of the existing literature is concerned with these finer details, many of which, though not all, could more profitably be left to architects.

The following discussion often applies just as much to the layout of a one-room library as to the design of a complete library building. Where the provision and siting of a room for a particular purpose has been suggested this is often only for convenience of discussion; in several cases it could well apply to a working space within a room.

SITUATION ON SITE

If a choice is available the situation of the library on the factory site should be largely decided on the basis of convenience to the users. It should be the desire of a live management and librarian that the library should be much used, and nothing discourages a visit more than an out-of-the-way situation for it. So managements should take pains in siting their libraries.

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* Much detailed information is given by J. Binns in the companion paper to this one.

A good position is one near the centre of gravity of the site plan, or better still, if such a position can be determined, near the centre of the staff who will most use it. When deciding a location on this basis, the management, if it can, should take account of any future factory expansion.

There is another situation which has much to commend it, and that is one that is adjacent to either the main factory entrance or to the factory canteen. This can encourage the staff to make their regular visits for browsing through the latest information, a process which cannot but make them more valuable to the management. This latter position has the disadvantage that information sent out from the library can have farther to go.

ORIENTATION AND PLACING OF LIBRARY

The next stage in library planning is for management to reach a decision on the orientation and placing of the library, and in making this decision there is a prime consideration to be borne in mind. This point is that a live library is an expanding thing. This is such a fundamental consideration in library planning that it is amazing how it could be overlooked or even ignored. Management must thus make a decision on the number of years for which the planned accommodation must suffice. A popular figure seems to be from six to ten years.[1] Reliance is then placed on the skill of the librarian in estimating the space required after this period. It is not sufficient to make a general estimate of the library rate of expansion; the rate of expansion of each type of stock must be estimated separately. Assistance in doing this can be obtained from the existing literature, for instance, J. B. Reed.[2]

With a separate building for only library accommodation there is not usually any great difficulty in allotting ground space on the site for future expansion of the building. With a library occupying part of a building that is also used for other purposes there is often difficulty, where the library part of the building cannot be extended, in arranging for future expansion into suitable accommodation. A library needs accommodation designed for its purpose just as much as, say, research or administration. Such features as unsuitable room sizes and shapes, awkward door locations and inconvenient column spacing between windows often make it unsatisfactory to expand in this way.

If the library forms part of a building it is usually desirable to have it on the ground floor. The main reason for suggesting this is to make it more readily accessible both for users and for mail, the latter sometimes being so heavy as to require a service lift. But there is also the reason that library stocks can apply high floor loadings.

There are other points to be considered before deciding on a particular building in which to place the library. One is that there should be no large-scale source of vibration within the building; for though a library can be readily protected from high-frequency noise, little or nothing can be done about low-frequency vibration. Librarians have also spoken feelingly about laboratories overhead in which there is a risk of flooding.[3, 4] Another point is orientation to give good natural lighting, though in this respect the library may have to forgo an ideal situation.

ARRANGEMENT OF ACCOMMODATION

In arranging the accommodation the first point considered is that of entrance to the library. It is suggested that there should be one entrance only into the library and that this should open directly on to an information room.* Restriction to one entrance is desirable so that all traffic into and out of the library can be satisfactorily supervised. Thus this entrance must be manned, and doing this not only provides a physical barrier but also a strong psychological barrier to unchecked removal of stock. Thus the information room can not only accommodate ready reference literature and be the general centre for both personal and telephonic inquiries but also be the point where loans are recorded.

For the rest of the library the accommodation both for storage and for use can be split up according to the type of material housed. Each type will be associated with accommodation for the staff who will work on that material.

READING MATTER

The first type of material whose accommodation is now discussed is reading matter, and here there is an important consideration that is almost unique to technical libraries. This is that the reading matter and its accommodation must be separated into that which is militarily classified and that which is not. If this separation is not made, then use of the whole library becomes restricted to only those entitled to access to the classified material.

Even with the smallest library it is considered that the classified stocks and their associated staff should be physically partitioned off.

As with the main library, there should be but one entrance into the classified section, and this should be supervised, preferably opening from the information room.

1. *Unclassified reading matter*

The unclassified reading matter can again be subdivided into the three classes:

(*a*) Books;
(*b*) Periodicals;
(*c*) Reports.

These sections, of course, are not watertight compartments, but they can provide definite divisions in the accommodation.

(*a*) *Books*

Except for the largest and older libraries the main reading room is

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* Exception is, of course, made in the case of emergency exits.

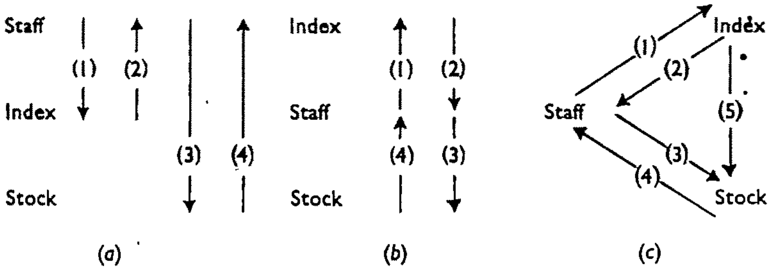

Fig. 1.—Staff paths between the accommodation for staff, indexes and stock.

also used for book storage. There are obvious advantages in placing the reader close to these stocks, but in a library where much borrowing by internal factory mail is done one should also place staff close to the stocks. For the reader it is of paramount importance that there should be almost absolute silence in the reading room and to achieve this one must exclude from here all staff together with, for instance, their typewriters and telephones; but accommodation for the staff concerned with the book stocks must be adjacent to such a reading room. Management should take an interest in deciding to what extent its library users can be trusted, but usually some supervision of the reading room is advisable. A satisfactory degree of supervision can be maintained if the staff accommodation and the reading room are separated by dividing walls with large windows. To maintain silence both these and other windows might be double panelled.

Another feature, conducive to quiet and usually popular with readers, is the placing of reading desks individually between bookcases that stand out from the walls instead of having a large central block of desks. This will decide the spacing of the columns between the windows. A high ceiling is a help, though not such a high one that a gallery can be built; use of the latter is generally disturbing. If only a low ceiling can be afforded, then covering it with sound-absorbent material is desirable.

Here, as in most of the library, as much natural light as possible is an asset, and in this reading room it is preferable that it should come in from the side of the reader.

Attempts to give a general rule for the proportions of space occupied by readers and by stocks[4] are bound to be of limited value. In an organization of fixed size the space required for readers will remain fairly constant, whilst the book stocks will increase. However, knowing the size of stocks and of furniture the total floor area can readily be assessed. Reed has given an interesting analysis[2] enabling this to be done with surprising accuracy.

(*b*) *Periodicals*

A room for the storage and reading of periodicals should be situated next to that for the books. This room should be accessible from the books reading room so that those studying in either room will have both

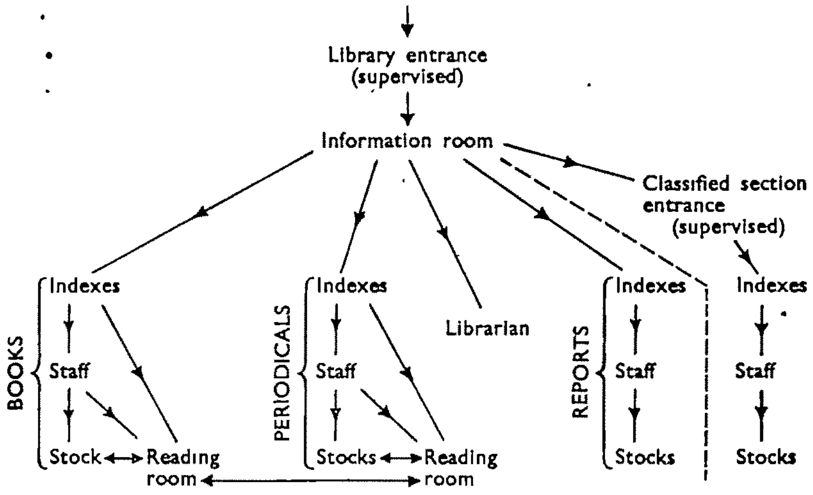

Fig. 2.—General library layout, illustrating the fan-shaped principle.

books and periodicals readily at hand. Traffic for this room should not have to pass through the books reading room, and so, like it, the periodicals room should open directly from the information room.

It will be noticed that a separate reading room for periodicals is suggested. Most readers of current periodicals are just browsing, and this tends to be a noisy process, provoking chatter. Hence it is suggested that it is worth having this extra reading room for periodicals in which talking is permitted. This also aids maintenance of the library discipline of silence in the books reading room.

Usually most visiting readers come to the library to look at the current periodicals, thus more generous accommodation for them is required in the periodicals reading room than in the books reading room. Emphasis should be placed on room for seating more than for desks.

(*c*) *Reports*

Unclassified reports, or at the very least unclassified series of reports, should be stored in the open part of the library and not within the classified part. Scientists in the main regard military classification as a necessary evil which should be kept to a minimum, and the hiding of knowledge in the form of unclassified reports in the classified section, often just for the convenience of the library, is deplorable. Management should support a desire of its staff to have ready access to all material except that forbidden by rules of military security.

Thus separate storage space is needed for the reports within the unclassified section. If new accessions are displayed, as with current periodicals, then a small space is needed for readers. Except for this latter space and the accommodation for reports staff, natural lighting is not greatly important. Although it is still desirable that this room should have direct access from the information room, because the mail traffic is probably heavy, it could possibly, as a second choice, open from the periodicals room.

It should be adjacent to the accommodation for its staff who, if they are not the same, should be adjacent to the staff for the classified reports.

2. *Classified reading matter*

The stocks in the classified section are almost entirely in the form of reports. The very small proportion of any other form of material, such as handbooks, can readily be stored with these reports and do not need separate accommodation.

As previously mentioned, the classified section should be physically partitioned off from the rest of the library, having its own single and supervised entrance. This entrance could conveniently open from either the information room or perhaps the unclassified reports room. Other features of that room, as previously discussed, will obviously apply to the room for the classified reports.

Indexes

Indexes must be carefully accommodated in relation both to their appropriate staff and stocks. The relative placing of these three items can be considered by reference to the diagrams of Fig. 1. In this simplified representation three possible arrangements are given, the two straight-line arrangements and the triangular one. For a pattern of work in which the librarian wishes to go to the index and stock in succession and then return to his own position arrangement (*c*) is the best, with arrangements (*a*) and (*b*) equally second best. For a pattern in which the librarian visits the index and the stock separately, arrangements (*b*) and (*c*) stand equal, with (*a*) a second best. There are thus arguments for choosing arrangements (*c*), (*b*) and (*a*) in that order of preference.

It is also desirable that all indexes should be adjacent to the staff in the general information room. It may be difficult to do this with the index of classified material in a small library, as its entrance on to the information room has to be manned.

Equipment

The accommodation of equipment is not usually difficult to fit into the general accommodation scheme so far discussed. Items are mostly associated with one of the three main sections, books, periodicals and reports. For instance, microcard readers can readily be fitted into the reports section.

SHAPING OF ROOMS AND ACCOMMODATION

Though in the previous discussion it has been suggested that the staff should be accommodated next to their appropriate stocks, in theory it is preferable that they should be situated at the centre of them. Also it reduces the amount of walking to the stocks if they are laid out as a square or circular floor area rather than a long, rectangular one.

It is also preferable that the stocks should be so arranged that the latest items are nearest to the staff. Usually this is impossible with books, though it can sometimes be managed with periodicals and reports.

PLAN AS A WHOLE

When one tries to adopt the previous principles of arrangement into a general layout for a library, one usually finds that it is impossible in a mere three-dimensional space! However, the previous discussion leads to a layout that is fan-shaped. This is illustrated in Fig. 2. At the apex of the fan is the entrance and information room, with each section going off from there along its own radius. The librarian is shown on a radial line of his own at the same radius as the rest of the staff and with direct access from the information room.

This fan-shaped principle also has an advantage when a library has to be expanded. Then new sections can be added along another radial arm or extension of any section can be made out along its existing radial line.

It is obvious that there will be much overlapping and interweaving between the sections on each arm of the fan, and this will often dictate the order in which the sections should be placed around it. The placing in Fig. 2 is by no means to be accepted as the best in all cases.

Usually small stocks of items are easily fitted into this general scheme when the form of their use and the work to be done on them by the staff is borne in mind.

The principles of accommodation just discussed will, as previously mentioned, often be applicable to the small library situated in a single room. Many libraries can be improved at little cost by rearranging the contents and perhaps fitting light but soundproof partitions.

Further, it is a good idea when a new library is being planned to choose a large and preferably unobstructed floor area on which these light partition walls could be erected. Hence modification with growth of the library can be made at moderate expense.

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GUIDE TO EQUIPPING AND STAFFING OF INDUSTRIAL TECHNICAL LIBRARIES

BY JEAN BINNS, B.A., F.L.A.
Whetstone/Rugby Library, The English Electric Co., Ltd.

Aslib Aeronautical Group Conference, 6th–8th April, 1956

INTRODUCTION

IN this paper an attempt is made to calculate the cost of equipment and staff for an industrial technical library, with a view to providing in accessible, tabulated form data which might be useful in planning new libraries, or organizing those already established. The detailed tables are set out at the end of the text, and are clearly cross-referenced.

Although there is already much published on the merits of particular types of equipment and on fundamental principles of technical library planning, there seems to be a lack of detailed information on the expenditure likely to be incurred.[1] For this reason it should be helpful to consider the minimum requirements of a typical library, and work out an estimate of the cost of equipping and staffing during an initial five-year period.

Since this paper is addressed to members of the Aslib Aeronautical Group, it is assumed that the library in question is a certain Library X, which is to be developed in an aeronautical concern in the provinces, to serve 200 research engineers and scientists. However, as much of the information which follows should be applicable also to any technical library, it is hoped that the tables may be used to calculate the varying requirements of libraries in other industries.

MINIMUM STOCK AND SERVICES (*Table* 1)

A step which must obviously be taken before an estimate of expenditure can be made is to consider what services Library X ought to provide, and the nature and extent of the stock which would be necessary to make these services possible.

Table 1a enumerates the services which would be expected from an average aeronautical library serving 200 research workers. It will be seen that in Library X publications are not only acquired, processed and loaned (Items 1, 2, 3), but information is disseminated in such a way that the stock is fully exploited (Items 3, 4, 5).

Table 1b lists the minimum stock necessary to support such services. The figures given represent accessions during the initial five-year period, when the bulk of the back files of journals and book stock would be purchased. In subsequent years the addition of back files of journals should fall to 125 per annum, and of books and pamphlets to about 500. However, since Library X is an aeronautical library, the acquisition of 2,000 reports per annum would not be unreasonable. It should, however, be pointed out that in libraries in other industries, where the emphasis on reports is less pronounced, a much larger stock of technical books might be necessary. The need to acquire during the first five years a ten-year back file of 100 current journals, in addition to the volumes of journals retained from the current year's subscriptions, depends on the situation of the library. However, it is assumed that Library X is in a location isolated from any large university or public technical library, and it is thought essential that it should possess its own files of journals, particularly series of abstracts, without which literature searches (Item 5, Table 1a) could not be made on the premises.

Readers may be interested to consult a sample survey of aeronautical library practice, compiled in 1954, and compare its findings with standards proposed herein.[2]

EQUIPMENT

After deciding on the stock and services which should be provided, it is now possible to estimate expenditure on equipment and staff.

Taking equipment first, this section covers expenditure on book stock, storage equipment, mechanical appliances and seating accommodation. The prices quoted are approximate only but usually include purchase tax. Figures given are to the nearest whole number.

CONVENTIONAL EQUIPMENT

Book Fund (Table 2)

It is not easy to estimate the cost of purchasing publications for a technical library, since it is difficult to judge how much of its material will be donated. Company internal reports, some external reports, many pamphlets and all trade catalogues will be acquired free of charge. It is assumed that in the case of Library X half the reports are acquired gratis, and the rest at an average of 5*s*. each. The average cost of pamphlets has been taken at 5*s*. each. Expenditure on current journals will be heavy, about an average of £3 per title; the cost of technical books will be about the same price per volume, whilst the price of back volumes will be particularly high, especially for out-of-print items; an average figure of £4 per volume would be an underestimation, if it were not for the fact that a percentage of back volumes would probably be acquired gratis, through exchange organizations such as British National Book Centre.

STORAGE EQUIPMENT

In this section each type of publication is considered in turn, a preference for storage method suggested and alternatives given.

1. *Reports (Table 3)*

Four-drawer steel filing cabinets are preferred for the storage of reports, because the cabinets are strong, lockable, and may, in addition, be fitted with a security panel for classified documents. The other methods of storage are cheaper and less space consuming, but in the case of reports security may be the most important factor.

2. *Books* (*Table* 4)

Steel shelving has been chosen for cheapness. Wood shelving, although more expensive, is more pleasing, and if it can be afforded adds to the appearance of the library.

3. *Pamphlets* (*Table* 5)

The preferred method for housing pamphlets is in lateral filing cabinets, where they are more accessible than in pamphlet boxes. Steel filing cabinets are too expensive for holding pamphlets, since pamphlets are seldom folio size, and do not require security treatment.

4. *Journals* (*Current*) (*Table* 6)

There are several methods possible for the display of current journals. The method preferred in Table 6 is the 'Adapted Shelf Method'. Briefly, this employs book stacks 12 in. deep, containing ten shelves per bay, instead of the usual six. It is economical space, as an average of three current journals with one year's back file for each may be displayed per shelf, totalling thirty journals per bay. Clear guiding is essential, however, since the titles on the journals housed above eye-level cannot easily be seen. Regarding the alternative methods in Table 6, the display rack with the sloping hinged-shelf, holding one year's back file on horizontal shelves beneath, is attractive from the reader's point of view, as current journals are quickly located, but the equipment is expensive and space consuming. The trough-type rack holds more current journals in the same space than the hinged-shelf type, but it has the disadvantages of not accommodating a back file. Of the pigeon-hole types of periodical display rack, the horizontal type holding one year's back file as well as the current number has much to recommend it, especially if the sides of the pigeon-hole are adjustable to allow for variety in journal size; but this method is twice as dear as the one preferred. The arrangement of current journals in folders placed in a vertical 'toast-rack' type of display units, sometimes seen in public libraries, is another method which, although fairly expensive, does protect the current journals from wear and tear.

5. *Journals* (*Bound*) (*Table* 7)

Bound journals are housed in either steel or wood bookcases. For Library X steel shelving, being cheaper, would be chosen. For bound volumes of journals, which are generally larger than books, it is as well to purchase shelves 12 in. deep.

6. *Journals* (*Unbound*) (*Table* 8)

Unbound journals are usually kept on steel shelves, preferably in pamphlet boxes. Although pamphlet boxes are not cheap, the expense may be justified, as they protect the journal from wear and tear and in addition facilitate the handling and location of unbound parts.

7. *Trade catalogues* (*Table* 9)

Lateral filing cabinets are preferred for trade catalogues, as material is more accessible filed this way than stored in pamphlet boxes, whilst the security provided by steel cabinets is not essential for trade catalogues.

8. *Photographic negatives* (*Table* 10)

The cheapest method of storage, that is in pamphlet boxes on steel shelving, should be adequate for photo-copy negatives. Whilst negatives of material not in the library's stock should be kept, there is some doubt whether the expense of storage justifies keeping the negatives when the originals are also available. Storage of negatives would appear to be economical only when a regular demand for prints from them can be expected.

9. *Library records storage* (*Table* 11)

Catalogue cabinets. The 5 in. × 3 in. sloping-drawer wooden catalogue cabinets are preferable to the metal-drawer type, as they are easier to consult. The 5 in. × 3 in. card is adequate for catalogue entries, although not sufficiently large for abstract entries; but large cards would mean larger drawers, and cabinets less economical in space.

Card cabinets. (*Loans, etc.*) Since Library X uses loans forms in triplicate, a four-drawer cabinet is necessary for filing three sequences under author, date due back, and borrower; the fourth drawer is used for requests from outside libraries. The library will also need two six-drawer cabinets for stock cards, order cards and miscellaneous records. Steel cabinets could be used for this purpose, lockable types being necessary for secret records; but wooden, cloth-covered types are cheaper and adequate, although they are easily damaged and cannot be used for security purposes.

Kardex-type cabinet. A cabinet of this type may not be necessary if the library does not circulate journals, as receipt cards filed in an ordinary catalogue drawer in alphabetical sequence would suffice for periodical records; but a Kardex-type cabinet, having four slides each fitted with sixty pockets, would be necessary for Library X if controlled circulation is desired. The pockets will hold both receipt and circulation slips, and coloured signals are used to indicate dates of return against the title of each journal.

SEATING FACILITIES (*Table* 12)

The seating accommodation for readers depends upon the space available, but it should be adequate for them to consult in the library non-loanable items such as current journals, abstracts and reference books. Sufficient accommodation for the library staff is also essential, and adequate space for packing and unpacking parcels. It will also be as well if two bays of steel shelves are purchased for the use of library staff only, to hold publications in various stages of classification, cataloguing and processing. A steel cupboard for storage of library stationery is also necessary.

MECHANICAL DEVICES

1. *Photo-copying equipment (Table* 13)

There are several methods of photo-copying, but the main types of interest to a library of this size are reflex, dyeline and transfer. The dyeline method, though heavy on initial equipment expenditure, produces cheaper copies than any other method. It is also a speedy process, although possibly not as speedy as the transfer method. The transfer method is, however, expensive when more than one copy is required, as a new negative has to be made for each positive. The reflex method uses equipment cheaper than the dyeline machine, and the quality of the reproduction is very good; but it is a slower method than the other two, and the cost per page is higher than dyeline. The dyeline has on the whole the advantage over the other machines for the requirements of Library X.

2. *Microphotographic equipment*

A library, even though its own documents are not on microrecords, should be equipped to read micro-opaques and microtransparencies, as material not otherwise obtainable may sometimes be borrowed in this form. Library X should purchase both a microfilm and a microcard reader, as it should have the facilities for reading either type of microrecords. Although at present there are microcard readers which may be used to read transparent microfiche and microfilm strip, there is not yet, as far as the writer knows, a microcard reader which may be used also for roll microfilm, and therefore a separate machine must be obtained for this purpose.

STATIONERY (*Table* 14)

An attempt has been made to estimate the expenditure in Library X over five years. The total does not include general stationery, such as company notepaper, blotting paper, ink and so on; but does include a figure for the cost of library publications. The figure of £150 for the cost of loan forms represents the price for 'continuous' stationery. The price of loan forms in triplicate made up into pads, carbon backed, for example, would be considerably higher; approximately £500 for the same number of forms. The cost of dyeline paper might be rather less than estimated, where the company obtains reductions from the supplier in view of large quantities consumed in the concern as a whole. The cost of chemicals for the dyeline machine has not been estimated.

Binding. It is supposed that Library X will bind about 125 volumes a year, about half of the journals taken annually, and in addition a ten-year back file, making a total of 1,875 volumes in five years. There are arguments for and against binding of back volumes of periodicals. The arguments for binding are that journals kept in pamphlet boxes get worn more easily than when bound, and also parts are frequently lost. The arguments against are that it is more expensive to bind journals, the cost of binding being about £1 per volume, whereas the cost of a pamphlet box to hold a volume is about 7*s*. Also, a bound volume may be loaned to only one person at a time, whereas if it is unbound several readers can consult it simultaneously. A solution of the problem at present seems to be to bind the journals and to provide photo-copies to satisfy requests for loans. For the future, microrecords may have to be made of at least the less used journals, requests being met either by loaning the microrecord itself and providing portable readers or by making an enlargement of the article required.

CONVENTIONAL EQUIPMENT. SUMMARY (*Table* 15)

Table 15 summarizes the information scattered across Tables 2–14, and gives an approximate total for Library X's expenditure on equipment during the initial five-year period. No attempt has been made to calculate the annual expenditure in subsequent years, but this may be estimated roughly from the data given for the first five years.

FUTURE DEVELOPMENTS

Finally, before concluding this section on equipment, it would be interesting to consider the consequences resulting from the reduction of the stock of Library X to microfilm, either microtransparencies (microfilm and microfiche) or micro-opaques (microcard and microprint). This transformation is already taking place in some libraries where accommodation is particularly limited; and is likely to become the general practice in industrial libraries, if the output of technical literature continues to increase.

At this early stage in developments it is difficult to make an estimate of the possible cost of a library in microform, but the attempt may be considered worth while, despite unavoidable errors and generalizations, if it stimulates the contribution of more accurate estimates from experts in microphotographic problems.

Consequently, it will be assumed that part of the stock of Library X is to be in microrecord form; that is, the back files of journals and 10,000 reports. In Table 16 an estimate is made of the comparative cost of equipment for the storage of these items in microcard, microfilm and microfiche, and in Table 17 a general summary is given of possible economies likely to be effected.

It will be seen from Table 17 that in order to exploit fully its microrecords Library X would need to purchase additional equipment. It is likely that several microfilm and microcard readers would be necessary, including portable models; and in addition equipment for the provision of a speedy enlargement service. Library X would also have the expense of either microfilming its volumes of journals, as they became ex-current, or obtaining the corresponding microrecords. In Table 17 it would appear that it might be cheaper to buy new microrecords than to microfilm the journals, if the titles concerned were available in microfilm. In Table 17 a figure is given for the cost of enlarging microfilm, which seems to be rather more expensive per page than dyeline photo-copying. Microcards, at present, cannot easily be enlarged, although single frames can be enlarged by photomicrographic cameras.

To compensate for this additional expense, considerable saving is shown in the left-hand column of Table 17. Not only is there economy in space and saving in storage equipment, but it seems that there would be saving in book expenditure, and, of course, in binding costs. The estimate of the purchase price of microrecords as 25 per cent. of the cost of full-size documents is probably rather a conservative one. For instance, vols. 1–117 of *Chemisches Zentralblatt* costs $7,000 in book form, but only $1,816 in microcard.

No total has been given in Table 17 for the amount actually saved by reducing a portion of the stock of Library X to microform; but a substantial economy seems to be indicated. However, much research still remains to be done on this subject; but the work is being tackled. Readers might be interested, for instance, to consult a report by Mr. J. Burkett, 'Why microrecords',[3] on which the arguments in this paragraph have been partly based.

STAFF (*Table* 18)

After estimating the equipment necessary for Library X, the next step is to calculate the number of staff required and to decide upon their qualifications.

According to United States standards, the average British technical library is understaffed. According to a recent article on 'Special libraries',[4] one librarian and one clerical assistant are regarded as necessary in the United States to serve thirty engineers. When it is considered that many British librarians with one assistant are serving three times this number of readers, it is not surprising that some cannot attempt to provide more than a loans service for their readers; whilst others work overtime for far too many hours, struggling to provide an adequate information service.

To operate a library providing the minimum services, which have already been outlined in Table 1, and which is in the first five years of existence, a staff of at least seven is essential. Of these seven, three should be trained librarians.

I have listed in Table 18 details of the individual members of the staff, together with their qualifications. It is imagined that in the case of the particular library which is being planned the photo-copying machine is not operated by library staff, and that the library has to pack its own parcels, and cannot make use of a typing pool.

Qualifications

Regarding staff qualifications, it is, of course, impossible to be as dogmatic as in Table 18; for when personalities are concerned there are always exceptions to the rule. However, it can safely be said that the Chief Librarian must have the ability to equip himself speedily with a conversible knowledge of his readers' technical interests, show great skill in organization and, above all, possess force and determination moderated by tact. If possible, the Chief Librarian would be wise to choose a deputy with qualifications complementing his own; so that if, for example, the deputy is an expert in library equipment, the Chief should be knowledgeable in all latest developments in subject classification. Both the Chief and deputy should become familiar with the subject matter of their library and sources of information, and it is advisable for one or the other of them to have language qualifications.

Salaries

As for salaries, it is helpful to take as a guide for the qualified staff the Local Government A.P.T. rates, since when recruiting staff special libraries have to compete with public libraries; but the clerical salaries will most likely be the same as those paid to clerical assistants in other departments of the company. At the present time the lowest rate paid to the qualified librarian in public libraries is £530 per annum, and special libraries should not pay less than that figure to the professional members of the staff. Regarding the relative salaries of the various members of the staff, it has been suggested that the Chief Assistant's salary should be 50–60 per cent. of the Chief Librarian's, and the deputy 66–75 per cent.

CONCLUSION

In conclusion, it is hoped that this paper will not only fulfil its purpose, and serve as a handy guide for those concerned with library planning but may, incidentally, assist in raising the standard regarded as average for industrial technical library expenditure.

TABLES

Table 1. Services

Table 1. Minimum Services and Stock

Tables 2–16. Equipment

Table 2. Book Fund
Table 3. Conventional Storage Equipment. Reports.
Table 4. " " " Books.
Table 5. " " " Pamphlets.
Table 6. " " " Journals, Current.
Table 7 " " " Journals, Bound.
Table 8. " " " Journals, Unbound.
Table 9. " " " Trade Catalogues.
Table 10. " " " Photo-copy Negatives.
Table 11. " " " Library Records.
Table 12. Conventional Equipment. Seating Accommodation.
Table 13. " " Mechanical Devices.
Table 14. " " Stationery and Binding.
Table 15. " " Summary.
Table 16. Future Equipment. Microrecords. Storage.
Table 17. " " Microrecords. Possible Economies.

Table 18. Staff

Table 1
SERVICES AND STOCK OF LIBRARY X

1a. SERVICES

1. *Documentation of stock*
   The stock is classified and catalogued, so that all publications in the library are retrievable by subject, author or report number.
2. *Loans service*
   Loans average forty items per day, totalling about 10,000 a year. In the first five-year period at least 2,500 are borrowed from outside libraries per annum.
3. *Photo-copying service*
   The loans service is supplemented by a photo-copying service reproducing about 10,000 pages per annum.
4. *Abstracting and indexing*
   The library fully exploits its current journals by making brief abstracts of relevant articles, which are included in a *Weekly Review of Current Literature*. These articles, approximately fifty per week, are later classified and typed on cards, for insertion in an information catalogue.
5. *Technical information service*
   The library staff use the stock to provide an information service, ranging from brief answers for 'quick reference' queries to extensive literature surveys for new research projects.

1b. STOCK (INITIAL FIVE YEARS)

Reports	10,000	
Books	2,000	
Pamphlets (Books with less than 100 pages)	1,000	
Trade Catalogues	5,000	
Photo-copy negatives	5,000	
Journals (Current subscriptions)	200 titles per annum	
Journals (Back volumes. 125 vols. each year for five years)	625	1,875 vols.
Journals (Back volumes. Previous ten years at 125 vols. per annum)	1,250	

Table 2
EQUIPMENT

BOOK FUND

	Quantity	*Price*	£
Reports	10,000	5,000 @ 5*s*. each	1,250
Books	2,000	@ £3 „	6,000
Pamphlets (Books with less than 100 pages)	1,000	@ 5*s*. „	250
Journals (Subs.)	200	@ £3 „ p.a. for 5 years	3,000
Journals (Back vols.)	1,250	@ £4 each	5,000
Trade catalogues	5,000	Gratis	—
		Total	£15,500

Table 3
EQUIPMENT: STORAGE

REPORTS

To accommodate 10,000 reports

Preferred method

Filing cabinets.

Capacity 600 reports (100 pockets).

Quantity: 17 Cabinets. *Price:* @ £28 per Cabinet including 100 pockets each .. £476

Other methods

1. Lateral filing cabinet, 36 in. × 84 in. × 15 in. (6 bars, 300 pockets. Leathercloth roller blinds.)
   Capacity 1,500 reports.
   Quantity: 6⅔. *Price:* @ £50 each £334
2. Pamphlet boxes and steel shelving.
   Pamphlet boxes. 3 in. deep. Capacity 20 reports.
   Steel shelving, 36 in. × 84 in. × 12 in. bays (with 6 shelves each).
   Capacity 12 pamphlet boxes per shelf.
   Quantities: 500 boxes. 7 bays. *Price:* @ 7*s.* a box £175
   @ £10 a bay £70
   —— £245

Table 4

EQUIPMENT: STORAGE

BOOKS

To accommodate 2,000 books

Preferred method

Steel shelving, 36 in. × 84 in. × 10 in. bays (with 6 shelves each).
Capacity 20 vols. per shelf. 120 vols. per bay.
Quantity: 17 bays. *Price:* @ £10 per bay £170

Alternative method

Wood shelving. Same dimensions and quantity.
Quantity: 17 bays. *Price:* @ £15 per bay £255

Table 5

EQUIPMENT: STORAGE

PAMPHLETS

To accommodate 1,000 pamphlets

Preferred method

Lateral filing cabinet, 84 in. × 36 in. × 15 in. (6 bars, 300 pockets. Leathercloth roller blinds.)
Capacity 1,500.
Quantity: ⅔. *Price:* @ £50 each £33

Other methods

1. Pamphlet boxes and steel shelving.
   Pamphlet boxes. 3 in. wide. Capacity 20 pamphlets.
   Steel shelving, 36 in. × 84 in. × 12 in. bays (with 6 shelves each).
   Capacity 12 pamphlet boxes per shelf.
   Quantity: 50 boxes. ⅔ bay. *Price:* @ 7*s.* a box £17
   @ £10 a bay £7
   —— £24
2. Steel filing cabinets (4-drawer).
   Capacity 600 pamphlets (with 100 pockets).
   Quantity: 2. *Price:* @ £28 per cabinet containing 100 pockets £56

Table 6

EQUIPMENT: STORAGE

JOURNALS, CURRENT

To accommodate 200 current journals

Preferred method

Adapted book steel shelves, 36 in. × 84 in. × 12 in. (10 shelves per bay).
Capacity: 3 current journals and one year's back file per shelf.
Quantity: 7 bays. *Price:* @ £12 a bay £84

Other methods

1. Display rack. Hinged shelves (metal), 36 in. × 84 in. × 12 in. (5 shelves). Capacity: 30 current journals and one year's back file.
   Quantity: 10. *Price:* @ £20 .. .. £200

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2. Display racks, trough type (wood), 36 in. × 72 in. × 12 in. (6 troughs). Capacity: 36 current journals but no back files. Back files on steel shelves 36 in. × 84 in. × 12 in. (6 shelves per bay). Capacity: 4 vols. per shelf.

Quantities: 6 racks. *Price:* @ £30 each £180
8 bays shelving @ £10 per bay £80
—— £260

3. Pigeon-holes. Vertical display holes, 3 in. × 12 in. × 12 in. Spring-back folders as per size of journals. Capacity: 1 current journal in folder per hole. Back file on steel shelves, 36 in. × 84 in. × 12 in. bays (6 shelves per bay). Capacity: 4 vols. per shelf.

Quantities: 200 pigeon-holes. *Price:* @ 10*s*. each £100
200 folders (spring-back) @ 5*s*. each £50
8 bays steel shelving. @ £10 per bay £80
—— £230

4. Pigeon-holes. Horizontal display holes, 12 in. × 8 in. × 12 in. Capacity: current journals and one year's file of journals

Quantity: 200 pigeon-holes. *Price.* @ £1 each £200

Table 7

EQUIPMENT: STORAGE

JOURNALS, BOUND

100 titles bound annually. Allowing for a quarter of these titles to be bound into more than one vol., 125 vols. a year for five years amounting to 625 vols. In addition 10-year back files of these vols. amounting to 1,250 vols. Total: 1,875.

Preferred method

Steel shelving, 36 in. × 84 in. × 12 in. bays (with 6 shelves each).
Capacity: 12 vols. per shelf.

Quantity: 26 bays. *Price:* @ £10 per bay £260

Alternative method

Wood shelving. Same dimensions.

Quantity: 26 bays. *Price:* @ £15 per bay £390

Table 8

EQUIPMENT: STORAGE

JOURNALS, UNBOUND

Out of 200 current journals 50 kept for five years amounting to 250 volumes in five years. In addition allowing for two-fifths of these titles being published in more than one vol. a year, a total of 350 vols. are to be accommodated.

Preferred method

Pamphlet boxes and steel shelving.
Pamphlet boxes, 3 in. wide. Capacity: 1 vol.
Steel shelving, 36 in. × 84 in. × 12 in. bays (6 shelves each).
Capacity: 12 pamphlet boxes.

Quantities: 350 pamphlet boxes, 5 bays. *Price:* @ 7*s*. a box £123
@ £10 a bay £50

Total £173

Table 9

EQUIPMENT: STORAGE

TRADE CATALOGUES

To accommodate 5,000 trade catalogues

Preferred method

Lateral filing cabinet, 36 in. × 84 in. × 15 in. (6 bars, 300 pockets. Leather-cloth roller blinds.)
Capacity: 1,500 trade catalogues.

Quantity: 3⅓. *Price:* @ £50 each £167

Other methods

1. Pamphlet boxes and steel shelving.
   Pamphlet boxes, 3 in. deep. Capacity: 20 catalogues.
   Steel shelving, 36 in. × 84 in. × 12 in. bays (with 6 shelves each).
   Capacity: 12 pamphlet boxes.

Quantities: 250 boxes. 3½ bays. *Price:* @ 7*s.* a box £87
@ £10 a bay £35
—— £122

2. Steel filing cabinet (4-drawer).
   Capacity: 600 catalogues (with 100 pockets).

Quantity: 8⅓ cabinets. *Price:* @ £28 per cabinet containing 100 pockets .. £233

Table 10

EQUIPMENT: STORAGE

PHOTO-COPY NEGATIVES

To accommodate 5,000 negatives

Preferred method

Pamphlet boxes on steel shelving.
Pamphlet boxes, 3 in. deep. Capacity: 20 negatives.
Steel shelving, 36 in. × 84 in. × 12 in. bays (with 6 shelves each).

Quantities: 250 pamphlet boxes. 3½ bays. *Price:* @ 7*s.* a box £87
@ £10 a bay £35
—— £122

Other methods

1. Steel filing cabinet (4-drawer).
   Capacity: 600 negatives (with 100 pockets).

Quantity: 8⅓ cabinets. *Price:* @ £28 per cabinet (100 pockets) £233

2. Lateral filing cabinets, 36 in. × 84 in. × 15 in. (6 bars, 300 pockets. Leathercloth roller blinds.)
   Capacity: 1,500.

Quantity: 3⅓. *Price:* @ £50 a bay with 300 pockets £167

Table 11

EQUIPMENT: LIBRARY RECORDS STORAGE

CATALOGUE CABINETS

(Records)

To accommodate catalogue cards of reports, pamphlets, books, journals, abstracts, trade catalogues and photo-copies, amounting to 147,500 cards (see Table 14.)

Preferred method

Wood cabinet with 5 in. × 3 in. sloping drawers.

Quantity: 2 30-drawer cabinets. *Price:* @ £80 each £160
1 40-drawer cabinet. @ £90 „ £90

Total £250

CARD CABINETS

(Loans, etc.)

Preferred method

Cloth-covered wood cabinet with 5 in. × 3 in. drawer.

Quantities: 1 4-drawer for loans *Price:* @ £4 each £4
2 6-drawer for stock cards, order cards, etc. @ £6 „ £12
—— £16

Other types

Metal cabinet with 5 in. × 3 in. drawers.

Quantities: 1 4-drawer.	*Price:* @ £8 each	£8
2 6-drawer.	@ £12 „	£24
		£32

'KARDEX' TYPE CABINET

Quantity: 1 with 4 slides. *Price:*	£22
Total	£288

Table 12

EQUIPMENT: SEATING ACCOMMODATION

DESKS, TABLES, CHAIRS, CUPBOARDS

READERS' ACCOMMODATION

		£
Tables Quantity 2	*Price*	30
Chairs Quantity 8	*Price*	24

STAFF ACCOMMODATION

Desks Quantity 2	*Price*	50
Typists' Desks Quantity 2	*Price*	40
Tables Quantity 3	*Price*	30
Chairs Quantity 7 (5 wooden and 2 typists' chairs)	*Price*	29
Shelving (steel), 36 in. × 84 in. × 10 in. (staff use). For publications in course of classification, cataloguing and processing. Quantity 2 bays	*Price*	20
Cupboard (steel), 36 in. × 72 in. × 15 in. (library use). 5 shelves, to hold library stationery. Quantity 1	*Price*	15
	Total	£238

Table 13

EQUIPMENT: MECHANICAL DEVICES

Typewriters 2. *Price:* @ £50 each		£100
Photo-copying equipment *Preferred method*—Dyeline. Light box, autopositive, processing and dyeline printing equipment. *Price*		£400
Other methods 1. Reflex—printer and processing equipment.	*Price* £100–£150	
2. Transfer—printer and developer.	*Price* £100–£150	
Microphotographic equipment Microfilm reader—1 standard table model.	*Price*	£180
Microcard reader—1 standard table model.	*Price*	£60
	Total	£740

Table 14

EQUIPMENT: STATIONERY AND BINDING

STATIONERY

Quantity:

1. *Catalogue cards:*

13,000 books, pamphlets, reports @ 5 cards each	65,000 cards	147,500
12,500 abstracts @ 5 cards each	62,500 cards	
5,000 trade catalogues @ 3 cards each	15,000 cards	
5,000 photo-copy negatives @ 1 card each	5,000 cards	

Price: @ 20*s.* per 1,000 .. .. £148

2. *Loans forms*

10,000 forms (triplicate) per annum amounting to 50,000 for 5 years.

Price: @ £3 per 1,000 .. .. £150

3. *Stock records*

Periodical receipt and circulation cards, stock cards, order cards, accession register, guide cards.

Price £100

4. *Publications*

Stencils, paper, etc., for library publications (weekly bulletin of 50 copies, monthly accession list, bibliographies).

Price £500

5. *Photo-copying paper* (for dyeline machine)

10,000 pages per annum amounting to 50,000 pages for 5 years.

Price: @ £2 per 100 pages £1,000

BINDING

1,875 volumes.

Price: @ £1 per vol. £1,875

Total £3,773

Table 15

EQUIPMENT: SUMMARY

(Five years' requirements.)

(Initial period.)

Book Expenditure	
Books	£6,000
Reports	1,250
Pamphlets	250
Journals (subs.)	3,000
Journals (back files)	5,000
	£15,500

Lateral Filing Cabinets	
⅔ (Pamphlets)	£33
3⅓ (Trade catalogues)	167
4 Bays	200
	£400

Card Cabinets	
3 Wood	£250
3 Cloth-covered	16
1 'Kardex' type	22
	£288

Seating Accommodation, etc.	
5 Tables	£60
15 Chairs	53
4 Desks	90
1 Steel cupboard	15
	£218

Filing Cabinets	
17 (Reports)	£476

Steel Shelving	
8½ Bays (Books)	£175
26 „ (Bound journals) ..	260
7 „ (Current journals) ..	84
5 „ (Journals, unbound)	50
3½ „ (Photo-copying negatives)	35
2 „ (Staff work room) .	20
	£624

Pamphlet Boxes	
250 Photo-copying negatives .	£87
350 Unbound journals	123
	£210

Mechanical Devices	
2 Typewriters	£100
1 Photo-copying equipment ..	400
1 Microfilm reader	180
1 Microcard reader	60
	£740

Stationery	
Catalogue cards	£148
Loan cards	150
Stock cards	100
Publications	500
Photo-copy paper	1,000
Binding	£1,875
	£3,773
Total	£22,029

Table 16

EQUIPMENT. FUTURE DEVELOPMENTS

MICRORECORDS. STORAGE EQUIPMENT

It is assumed that the 10,000 reports and 1,875 bound volumes accumulated in Library X are held on microrecords. This table compares possible storage costs of the documents when reduced to three different categories of microfilm; i.e. microfilm roll, microcard and microfiche.

In making these calculations it is supposed that:

1. The average number of pages of a report is 50.
2. The average number of pages per bound vol. is 1,000.

MICROFILM ROLL FORM

No. of reels. Taking 100 ft. of 35-mm. reel to equal 1,600 pages.

Reports ..	.. 10,000 reports reduce to	313 reels
Bound vols.	. 1,875 bound vols. reduce to ..	1,172 reels
Total	.. . .	1,485 reels

Storage equipment: 4-drawer metal cabinet, 28½ in. × 19½ in. × 28½ in.
Capacity: 250 reels.

Quantity· 6 cabinets. *Price:* @ £30 each £180

MICROCARD

No. of cards. Allowing 50 pages per card.

Reports ..	.. 10,000 reports reduce to	10,000 cards
Bound vols.	. 1,875 vols. reduce to . ..	37,500 cards
Total . ..	. . ..	47,500 cards

Storage equipment 5 in. × 3 in. drawer metal cabinets.
Capacity: 1,500 cards per drawer.

Quantity. 32 drawers. *Price.* @ £2 per drawer £64

MICROFICHE

No. of Microfiche. Allowing 50 pages per microfiche.

Reports	10,000 reports reduce to	10,000 microfiche
Bound vols.	1,875 vols. reduce to	37,500 microfiche
Total		47,500 microfiche

Storage equipment: 8 in. × 5 in. drawer metal cabinets.
Capacity: 3,000 microfiche per drawer.
Quantity: 16 drawers. *Price:* @ £2 10*s.* per drawer £40

Table 17
FUTURE EQUIPMENT
MICRORECORDS: POSSIBLE ECONOMIES

Assuming that all the bound journals of Library X and 10,000 reports are held in microform, an attempt is made below to indicate where possible saving in expense might occur during the initial five-year period. The cost of additional equipment is more than offset by the saving in cost of space, storage equipment, purchase of documents and binding costs. The cost of enlarging microfilm at present seems rather more expensive per page than that for dyeline photo-copying.

Saving likely in the expenditure estimated in Tables 1–15.

1. *Storage costs.*

(*a*) Storage equipment.
(See Table 16.) Saving would vary between £580 and £690.

(*b*) Space.
The amount of space saved would be about 90 per cent. It is not possible here to represent the economy in monetary value. The cost of library accommodation is not, in any case, shown in Tables 1–15.

2. *Book expenditure.* (See Table 2.)
The cost of obtaining 10,000 reports and the ten-year back files of journals should be considerably less than the £6,250 for full-size documents. Assuming that the cost is 25 per cent. of this figure, i.e. £1,563, the saving is £4,687.

3. *Binding costs.*
An amount of £1,875 should be saved on the binding costs of 1,875 vols.

Expenditure necessary in addition to that shown in Tables 1–15.

1. *Equipment.*

(*a*) Microfilm readers. (See Table 13.)	
3 additional standard table models @ £180 each	£540
4 portable readers @ £50 each	£200
(*b*) Microcard readers.	
3 additional readers @ £60 each	£180
(*c*) Enlarger. (Required if library is to make own enlargements.)	
1 @ £50	£50
Total	£970

2. *Book expenditure.*
The volumes from the current journal subscriptions, amounting to 625 vols. in 5 years, which would normally have been bound, would either have to be purchased in microform, or microfilmed. Assuming they could be obtained at £1 per volume (25 per cent. of the price of full-size documents) the cost would be £625.

3. *Microfilming.*
Alternatively these volumes might have to be microfilmed if not easily obtainable in microform. Approximate figures for commercial microfilming are given below.
35 mm. Varies between 15*s.* to 30*s.* per 100 exposures.
16 mm. Half the price of 35 mm.
Reductions may be made for quantities over 5,000 pages.

4. *Photo-copying costs.* Where documents are held in microfilm, enlargements would replace photo-copying costs. (Dyeline copying costs approximately 5*d*. per page for single copies and 2*d*. for duplicates.)	4. *Enlargements.* Approx. 6·66*d*. for a 10 in. × 8 in. page; 10*d*. for a 10 in. × 12 in. page.

Table 18

STAFF

Duties	*Qualifications*
CHIEF LIBRARIAN	
Policy, planning and general organization. Liaison with Management, Technical Staff and Professional Colleagues. Responsibility for classification, book selection and technical inquiries.	A Science graduate and Associate of the Library Association; or a Fellow of the Library Association with several years' experience in technical libraries. Knowledge of two foreign languages.
DEPUTY LIBRARIAN	
Technical inquiries, literature surveys and bibliographies. Indexing journals and preparation of Bulletin. Translations. Indexing of trade catalogues.	A Science graduate and an Associate of the Library Association; or an Associate of the Library Association with experience in technical libraries. Knowledge of two foreign languages.
CHIEF ASSISTANT	
Cataloguing. Requests for loans from outside sources. Recording of photocopies. Acquisition of back files of journals. Supervision of book ordering.	Associate of the Library Association; but previous experience in a technical library not essential.
CLERICAL ASSISTANT	
Issues of loans. Overdues. Responsibility for stationery, binding, etc.	General Certificate of Education. First Professional Examination of the Library Association.
SHORTHAND TYPIST	
Typing of correspondence, library publications, bulletins, book lists, bibliographies.	Shorthand typist.
TYPIST	
Routine typing, requests for loans, orders, etc. Typing of index cards and catalogue cards.	Copy typist.
JUNIOR	
Periodical circulation. Duplication and stapling of publications. Parcels. Messages.	Should be studying for the First Professional Examination of the Library Association.

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All the above items may be borrowed from Aslib Library, except for those marked with an asterisk. These are mostly available for consultation in the Library, apart from a few for which locations in other libraries can be given by the Librarian.

ASLIB INFORMATION

Aslib Calendar

NORTHERN BRANCH. Annual General Meeting, Friday 25th January.

WINTER MEETINGS at the Royal Society of Arts, 8 John Adam Street, Adelphi, London, W.C.2.

Wednesday 30th January and Tuesday 5th March. See paragraph below.

Friday 29th March, Mr. H. C. Richardson of the Institution of Civil Engineers will speak on the reclassification of his library.

AERONAUTICAL GROUP Conference at the College of Aeronautics, Cranfield, Bucks, 5th–7th April.

ASLIB ANNUAL CONFERENCE 20th–22nd May at the Grand Hotel, Scarborough.

Aslib Winter Meetings

The next meeting will be held at 6 p.m. on Wednesday 30th January 1957, at the Royal Society of Arts, John Adam Street, Strand, London, W.C.2. Tea will be served at 5.30 p.m.

Dr. A. R. Michaelis, B.SC., F.R.M.S., Editor of *Discovery* will speak on 'Communication of Science by means of Film'. Information about scientific subjects can often be given by films better than by the written or spoken word. This applies to such varied activities as scientific research, scientific teaching, the documentation of science and biographies of eminent scientists. It is hoped to show examples of these various aspects by scientific films during the lecture.

Dr. Roger Manvell, Director of the British Film Academy will take the chair.

On Tuesday 5th March Dr. D. C. Martin B.SC., F.R.S.E. Assistant Secretary of the Royal Society, will speak on the Society's interest in scientific publications and the dissemination of information. Following a brief historical introduction, he will give an outline of the activities of the Royal Society, with special reference to its publications, which began with the *Philosophical Transactions*, first issued in 1665. He will also describe the policies governing the Society's library and the Society's interest in information services.

Midlands Branch

The Midlands Branch held a joint meeting with the Coventry Information Group at Coventry on Thursday 6th December. A stimulating address on 'Library Services to Industry in the Coventry Area' was given by Mr. E. Simpson, F.L.A., Director of the City Libraries, Art Galleries and Museums. Mr. Simpson outlined the varied services offered by the public library in an essentially industrial community, and stressed the value of co-operative schemes in helping to make that service more useful. A sustained discussion followed. The chair was taken by Mr. L. T. Oldaker, Tube Investments Limited.

Aslib Economics Group

'Measuring consumers' intentions' was the title of a talk given by Dr. H. Durant of Social Surveys, Ltd., to the Aslib Economics Group on the 5th December 1956, at the Memorial Hall, Farringdon Street, E.C.4. Dr. Durant pointed out that consumer-intention surveys, based on random as well as pre-arranged samples, had outmoded book-keeping estimates and also gave much speedier results than did mechanical accounting. A national survey could be carried out in four days.

Dr. Durant instanced in particular the sampling of British consumers' intentions regarding durable goods (*e.g.*, watches, motor-cars). So far from producing over-optimistic estimates, the tendency was for sampling to underestimate demands. Some interesting examples of Gallup poll and public opinion surveys were given (including election results). Reference was made to an article on 'Forecasting short-term consumer demands', by Irving Schweiger, which had appeared in the *Journal of Business* (Chicago), v. 29, no. 2, April 1956.

A continuous stream of questions followed this valuable first-hand account of sampling methods. They ranged from the training of interviewers to the application of results. In his replies Dr. Durant drew very satisfyingly from his fund of knowledge and experience.

Copyright Act, 1956. (4 & 5 Eliz 2. Ch. 74)

This act has now passed through Parliament, and will become law on one or more dates still to be decided by the Board of Trade. It completely replaces the Act of 1911, and certain of its provisions aim to regulate the copying of copyright material in libraries. The Sections of special interest to members of Aslib are 6 and 7. Section 7 deals with photocopying in libraries, and contains provisions which exempt from infringement only photocopies made under stated conditions in libraries of a class prescribed by regulations to be made by the Board of Trade. The conditions appear to exclude from photocopying all special libraries and information bureaux of organizations conducted for profit, except with the consent, and on the conditions of the copyright holder. The old 'fair-dealing' clause is re-enacted.

Members who do photocopying would do well to obtain and study a copy. (H.M.S.O., 3*s.* 6*d.*). When the necessary regulations referred to above have been issued by the Board of Trade, it is hoped to publish a short explanatory note for the benefit of members. Meanwhile, it is understood that the Royal Society has agreed to keep in being its Fair Copying Declaration and is preparing a new leaflet about it for distribution.

Advanced Lecture—Discussion Course

A two-day course on 'Newer Techniques in Information Work' will be held at the College of Preceptors, Bloomsbury Square, London, W.C.1. on 19th and 20th February. Lectures will be given on 'Nearprint machines and special typewriters' by Mr. A. C. Ronan, The Royal Society, 'Machine methods for document reproduction' by Mr. A. H. I. Hearn, ICI Ltd., 'Mechanical translation' by Dr. A. D. Booth, Birkbeck College; and 'Visual aids' by Mr. Kenneth James, freelance designer for BBC Television. Application forms giving the programme in detail are circulated to members with this issue.

ASLIB INFORMATION

Fulbright Travel Grants

The United States Education Commission in the United Kingdom announces that Fulbright travel grants are available to citizens of the United Kingdom and colonies to go to America for academic or educational purposes, such as study, research or lecturing. All awards are competitive, recommendations are made by the commission, but the final decision rests with the Board of Foreign Scholarships in Washington. Application must be made to The United States Education Commission for the United Kingdom, 71 South Audley Street, London, W.1.

D.S.I.R. Intelligence Division

Mr. L. Poole has now taken over the technical information work in D.S.I.R. Headquarters for which Dr. Urquhart used to be responsible.

Dr. Urquhart is now engaged in preparing the plans for setting up and operating the proposed new National Science Lending Library. He is speaking on this subject at a meeting of the University & Research Section of the Library Association on 5th January at 2.15 p.m. at Chaucer House, London.

Punched cards

Aslib is anxious to hear of any uses of punched cards or other mechanical methods of indexing or cataloguing which have not been described either in the periodical literature or in Chapter XII of the *Handbook of Special Librarianship and Information Work* edited by W. Ashworth (Aslib, 1955). This applies also to any personal indexes made in this way. It is felt that these methods are not being sufficiently studied in the United Kingdom, and the information asked for will assist Aslib in efforts to remedy this. Members who send in information will not of course be obliged to take part in these efforts.

List of African and Oriental dictionaries

Bailey Bros. & Swinfen Ltd. have produced a new edition of their African–Oriental catalogue. This includes dictionaries in two hundred and fifty languages of Africa, Oceania, America, Asia and Asia Minor and gives English prices, though not publishers. It also lists some books useful in the study of a language, which are not strictly dictionaries. The catalogue is obtainable free of charge from Bailey Bros. & Swinfen Ltd., 46 St. Giles High Street, London, W.C.2.

Technical Book Review

The Aslib Library has received a number of inquiries concerning the journal, *Technical Book Review*. This journal was badly delayed during the strike last spring and did not appear for some months. It was taken over by the Century Press Group and re-appeared in September to October 1956. It is hoped that in 1957 it will be published every month instead of once every two months. Enquiries should be addressed to Technical Book Review, 5 Barrett Street, W.1.

The Journal of Documentation

There has been unexpected delay in the arrival of copy from America for the December number of *The Journal of Documentation*. It is unlikely, therefore, that copies of volume 12, no. 4, will be distributed before February.

Mrs Lucia Moholy

Mrs Lucia Moholy has completed her second assignment as Unesco Expert in Scientific and Technical Documentation under the United Nations Technical Assistance Programme in Turkey. She has now resumed her activities as Consultant in Documentation, at 127 Sloane Street, London, S.W.1.

Members' Advertisements

SPARE TIME WORK (a few hours per month) available for chemist; checking typed translations, verifying specialized terms, references, etc. Good scientific library facilities essential. E. B. Uvarov, "Dawn" Alphamstone, Bures, Suffolk.

SPANISH and PORTUGUESE evening classes and vacation courses. Book Centre (membership 3*s*. 6*d*. p.a.) has for sale extensive stock of books on Hispanic and Luso-Brazilian subjects. Members are invited to lectures, recitals, film shows, etc. Free lending and reference library of 26,000 volumes on Spain, Portugal and Latin America. For details of these facilities apply to the Education Department, The Hispanic and Luso-Brazilian Councils, Canning House, 2 Belgrave Square, London, S.W.1. SLOane 7186.

Situations vacant

A TECHNICAL INFORMATION OFFICER is required to take charge of our specialist library and the information service on plastics and related materials to our research laboratories and Clients. Knowledge of chemistry to degree standard and familiarity with plastics are essential requirements, as are ability to write reports and abstracts from technical literature and patents and ability to organise a library. Some knowledge of languages is an asset. Salary £700 to £900 to commence, future prospects depending on the successful candidate's energy and competence.—Please provide a synopsis of your education and career to Dr. V. E. Yarsley (Research Laboratories) Ltd., "Oaklands", Clayton Road, Chessington, Surrey.

AN INFORMATION OFFICER is required for a large group of Chemical Manufacturing Companies. The work includes searching, summarising, translating, and abstracting chemical and scientific literature, and preparing subject surveys and reports. Ability to translate technical French and German is essential, and a knowledge of Russian would be an advantage. Applicants should have a degree in chemistry, and have had several years' experience in information works. Write: Laporte Industries Limited, Group Documentation Department, Kingsway, Luton, Beds.

ASSISTANT LIBRARIAN AND INFORMATION OFFICER. British Nylon Spinners Ltd., Pontypool, Mon., invites applications to fill this post, the main duties of which will be responsibility for providing information services to members of the Research and Technical Development Departments. Candidates should have a science degree and preferably experience in a scientific special library. Starting salaries will be assessed according to qualifications and experience offered. Applications, which will be treated in strict confidence, should give the fullest possible details and be addressed to the Personnel Manager.

ASSISTANT EDITOR (man) required in London area for technical publications dealing with papermaking. Must be primarily interested in this kind of work. Qualifications—Degree in natural science, ability to translate from French and German essential, knowledge of other modern languages desirable (especially Swedish and Italian). Some industrial experience useful. Salary—£600–700 according to qualifications, etc. Contributory superannuation scheme. Applications to be accompanied by copies of references and names of three referees. Apply to The Secretary, Technical Section, British Paper & Board Makers' Association, St. Winifred's, Welcomes Road, Kenley, Surrey.

Wanted

Speculum, vol. 19 (1944), parts 3 and 4 or whole volume. Any offers to Miss E. Ditmas, Beechwood, Aspley Guise, Bletchley, Bucks.

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THE LIBRARY of the London Transport Executive at 55 Broadway, S.W.1, has certain numbers of the following periodicals for disposal: *Paint Tecnology*, 1952; *Paint, Oil and Colour Journal*, 1953; *The Electrical Review*, vols. 152 and 153, 1953.

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AN EXPERIMENT IN INTERNATIONAL COMMUNICATION

E.P.A. TECHNICAL DIGESTS

BY C. W. HANSON, B.SC.*

Summary of talks given at Aslib meetings in London, 25th October, 1956, and Birmingham, 30th October, 1956.

EUROPEAN PRODUCTIVITY AGENCY (E.P.A.) was set up in 1953, by the Organization for European Economic Co-operation (O.E.E.C.), in order to handle projects designed to help to make possible rapid increases in productivity in member countries. E.P.A. has a Technical Information Section, under Dr. Norbert Grell. One of the projects of this section is the production of *E.P.A. Technical Digests*. The purpose of the project was to enable technical people, particularly those in small and medium-sized firms, to read, in their own language, digests of articles describing plant, processes and materials which could be widely applied, and would have an immediate effect in increasing productivity. Behind the digest project lay such ideas as the following: whereas a Norwegian physicist, for instance, could be expected to learn, via scientific abstracts, of important work in his field published in, say, Italy—and, if the work was important enough, to have it translated—a Norwegian foreman would almost certainly never know of some useful practical workshop hint published in an Italian journal; to meet the foreman's need, a digest, simply written *in his own language*, and preferably illustrated, would be needed—an abstract would be insufficient, and a full translation of the original article would often be excessive.

The organization of the project was necessarily complex. In each country taking part (top left of chart) a technically qualified national editor was chosen, and he gathered round him a team of selectors and digest writers. Journals on an agreed list (about 1,200 journals in all) were scrutinized regularly and articles suitable for digesting were chosen;

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* Head of Information Department, British Scientific Instrument Research Association. Mr Hanson went for a year to Paris, on leave-of-absence, in order to start *E.P.A. Technical Digests*.

digests were then written in the original language, translated into English, and sent, with illustrations and copies of the original articles, to Paris. There they were finally edited, technically and linguistically, the edited versions being translated into French. A monthly 'pack' of about seventy digests was then published, in English and French, and copies were sent to each participating country. Up to this point the whole, or part, of the cost was borne by E.P.A. under contract arrangements with the individual countries. (Some countries—bottom left of chart—contributed occasional digests at their own cost.)

The distribution of the digests (translated into the language of the country where necessary) was handled by each country in the manner thought best by that country and at its own cost. Most countries translated the digests (or some of them) into their national language and published them as a periodical, which was generally sold on a subscription basis. Some issued translated title lists and then supplied individual digests on demand; others did both. In the United Kingdom (where the project is handled by D.S.I.R.) digests are distributed as individual sheets, on a selective basis, a title list being circulated on a wider basis in addition.

The project has made rapid progress—the first issue was in May, 1955—as judged by the number of countries which have thought it worth while to use and distribute the digests. The ultimate effect of the digests in terms of actual usage of apparatus and methods described is much more difficult to assess, but a sufficient number of instances of effective use are known to justify the belief that the total effect is considerable and worth while. The difficulties, in selecting appropriate articles, writing good digests, and making translations, have been great and have not yet been fully overcome. The wide range of subjects covered has made editing difficult, and the large jump from just usable translations to virtually perfect ones has seldom been achieved. There is evidence, however, that in spite of their imperfections the digests are carrying technical knowledge of practical value across national frontiers which it would not otherwise pass, and getting it into the hands of people who are using it.

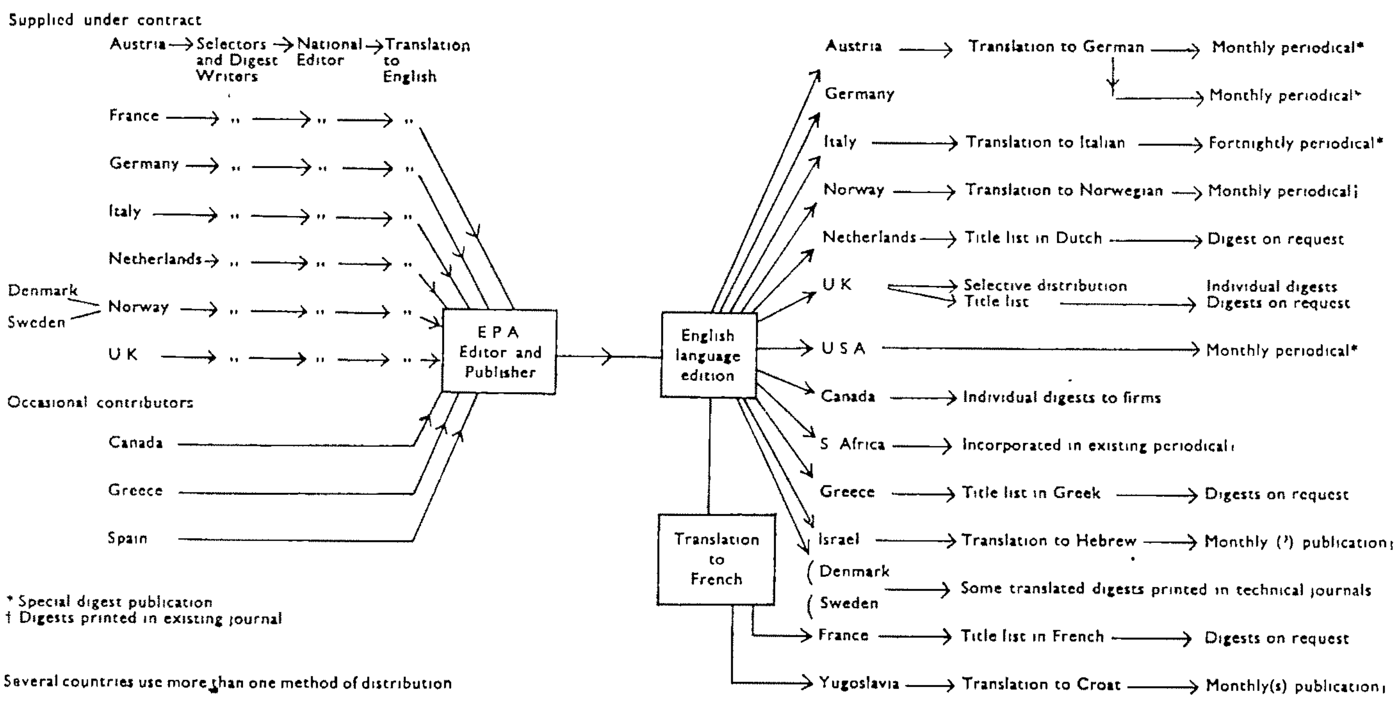
[Since these talks were given Spain has joined in the project under contract and will produce a Spanish edition. Digests are also being issued in Japanese.]

DISCUSSION

DR. D. J. URQUHART (D.S.I.R.): Some years ago we received in this country some technical digests from the U.S.A. We found that similar digests were being circulated in European countries and, partly for this reason and partly because we received complaints that the United States technical digests were advertising American processes and materials, it was decided to start as an experiment some United Kingdom technical digests. These were envisaged as separate sheets each of which would bring to the attention of industrial managements some development in technology which was ripe for immediate application We did not wish to create a new periodical but rather to extract and draw attention to valuable items in existing periodicals. It is for that reason we wonder whether the current practice in other E P A countries of issuing the digests in journal form is the best one.

J. B. REED (D.S I.R , and National Editor of *E P A. Digests* for the United Kingdom) The countries joining together in this *E P.A Digest* effort obviously differ greatly in the characteristics of their industry, and each country, in choosing subject

E.P.A. TECHNICAL DIGESTS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Title list → Digests on request
U S A → Monthly periodical*
Canada → Individual digests to firms
S Africa → Incorporated in existing periodical†
Greece → Title list in Greek → Digests on request
Israel → Translation to Hebrew → Monthly (?) publication†
Denmark
Sweden → Some translated digests printed in technical journals
France → Title list in French → Digests on request
Yugoslavia → Translation to Croat → Monthly(s) publication†

* Special digest publication
† Digests printed in existing journal

Several countries use more than one method of distribution items for contributing to the European digests, has naturally tended to follow its own standards of what is interesting or important. This needs pointing out, because inevitably most countries tend to find only a portion of the full E.P.A. collation useful. In our own case this portion has usually not been large although, on the whole, worth while.

The countries differ also in the manner and extent of the organization of their information services to industry In the United Kingdom we have an extensive system embracing many research and other associations which give systematic information service to extensive memberships. In many of the other countries such a system is only just emerging. This encourages differences in outlook between ourselves and others in regard to the kind of technical information that should be put out in digests and also how the digests should be brought to the notice of industry.

The United Kingdom has always been heavily on the side of the digest topic of broad, 'horizontal' rather than specialized or 'vertical' interest. Moreover, since D.S.I.R. has been the United Kingdom digest agency, whereas the corresponding agency in other countries has usually been the National Productivity Centre, distribution of digests by the United Kingdom Centre has mainly been through the industrial associations, whereas in other countries it has been direct to industrial firms. The centres in the other countries have welcomed E.P.A. digests as material for a main feature of their service whereas the associations in the United Kingdom have seen both E.P.A. and United Kingdom digests as being for supplementary use.

The principal circulation by D.S.I.R. has been to some 200 associations but about 150 firms have also been admitted to the mailing list specifically at their own request. All circulation has, however, been either of one-sheet, one-subject digests, individually or in sets of loose sheets, or of title sheets inviting requests for individual digests. In contrast most of the other countries have been issuing the digest material in special digest magazines, on subscription. Moreover, E.P.A. has itself been endeavouring to sell in the United States, and in the United Kingdom, a complete monthly collation of digests at a price of 14*s.* per copy. We have felt this to be not only a hopeless effort, on account of the very high price, but also contrary to the initial, and we think very sound, conception of a digest as a single, mobile page of information able to circulate without the encumbrance of other pages on other subjects, possibly unrelated.

Finding suitable original material for digests to send to E.P.A. has proved a difficult problem to us. In fact we have found difficulty in finding fifteen to twenty per month from over three hundred publications searched. Doubtless there is no dearth of good ideas that could usefully have further destinations in industry. But the digest is intended to be a document evoking interest and perhaps stimulating action. To be effective it must therefore contain fact and explanation: and, further, it can only be made from an original that is adequate in both. So much published material is seriously lacking in this respect. Moreover, many a useful idea takes form in a commercial product: the question then arises, is it unique or is it competitive? If the former, then is the published account of it merely descriptive, as in thinly disguised sales writing? Alternatively, if the idea is competitive what is to be done about the competing idea if there is no suitable published account of it available?

An ideal subject for digest service is the 'by-product' idea. An example is that of a special form of crane grab, entirely controlled by the crane driver from his cab: such an idea was recently developed by a large company for its own purposes. The company had no commercial interest in it but had, very reasonably, thought to gain prestige by publishing a full account of it. There must be many ideas in this category that relatively few people in industry get to know about because nobody writes them up. This is a great pity, and much benefit could come to industry at large if such ideas were described in technical publications—and perhaps 'digested'.

It has been most difficult to test what value can be ascribed to information so far sent out in digests. Various opinions have come to us, most of them favourable, but expressed only in general terms. What is, however, very clear is that the digest, as a tool of 'idea publicity', is becoming increasingly appreciated. The digest, in contrast to the abstract, is definitely an attempt to present material for attention by busy people. It must be written so that it is assimilated easily, quickly and with pleasure, and, wherever possible, be illustrated. The digest has a most useful future if these requirements are met.

THE DOCUMENTATION OF MECHANICAL ENGINEERING*

BY R. T. EVERETT, B.E.M.

Librarian, The Institution of Mechanical Engineers

BEFORE speaking on any subject it is wise and necessary to study the subject set, or the terms of reference given, in order that the speaker should not depart from what he has been assigned to do. In this connection I, too, thought it expedient to look at the title given to me as the subject on which I was invited to lecture. First of all there is that word 'documentation' much used in library circles. Now Dr. S. C. Bradford in his book *Documentation* defines the term as, and I quote, 'the process of collecting and subject classifying all the records of new observations and making them available at need', which doubtless summarizes in part the duties of a librarian. Now for the subdivision of the main subject—'Mechanical engineering'. A clear-cut definition for this is not so easy. Let me quote some attempts which have been made. The *Oxford English dictionary* indicates that mechanical engineering is the contrivance or making of engines or of heavy machinery. The American Society of Mechanical Engineers has defined the term as 'the art and science of generating, transmitting and utilizing mechanical power; of the production of tools, machinery and their productions; including research, development, design, application, and the co-ordination of materials, personnel and management'. (See *Mechanical Engineering*, November, 1941, p. 824.) Chambers's *Technical dictionary* defines it as 'that branch of engineering concerned primarily with the design and production of all purely mechanical contrivances; including all types of prime movers, vehicles and general engineering products'. And yet another definition appears in *A Dictionary of mechanical engineering terms*, by Horner and Abbey, which describes the subject as 'the art of construction of mechanism, generally comprising both prime movers and machines'. It is evident then that there is no clear-cut definition of this subject as there is in similar branches of engineering, such as electrical and civil, etc. Perhaps the truest, or at any rate an all-embracing, definition of mechanical engineering so far printed is that which appears in *The Oxford junior encyclopædia*, volume 8: *Engineering*. I quote, 'mechanical engineering in fact is the basis on which all other forms of modern engineering depend fundamentally'.

I have given these examples to indicate to you the wide scope of the subject—in fact whilst I have served for more than a quarter of a century in a special library devoted to mechanical engineering I have yet to discover the outer limits of the subject. Indeed, to give some idea of the field covered, the Institution of Mechanical Engineers has not only an Automobile Division but also specialized groups covering the following topics: internal-combustion engines, steam engineering, hydraulics, industrial administration and production, education, applied mechanics and lubrication.

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* Notes of a lecture given to the Department of Librarianship, North-Western Polytechnic, London, on 6th December, 1956.

As a result it is vitally necessary when selecting material for a special library devoted to mechanical engineering to keep a wide and open mind concerning branches or cognate aspects of the subject upon which material may be required. May I therefore enlarge upon this and describe to you some of the practices which are and have been carried out in the past in the special library of which I am librarian, namely the Institution of Mechanical Engineers. However, I would like to state at this point that any views expressed in this lecture must be understood to be personal.

SELECTION OF MATERIAL

Taking first things first, before one can administer a library it is, of course, necessary to possess a stock. Consequently I must talk about book selection.

No library is, I think, without some tools for book selection. Indeed, wise publishers circulate libraries with material concerning books they have published or are about to publish, and a close examination of such material can be a useful medium for book selection. One of the drawbacks of this service, however, is that quite a few publishers, and even booksellers, for that matter, give announcements of the publication of books even though the book is not likely to actually appear for many months, although they do not indicate this in their publicity. This practice is a menace to librarians, as the information also gets into the hands of readers who, in consequence, repeatedly requisition such works. I am sure their impression is that the library concerned is inefficient. It is difficult to get across to them that this is *advance* publicity. I waited three years before one such book appeared even though it had been announced as *published*. However, even so, these publishers' announcements are useful.

Some publishers, notably Wiley and Sons, of New York, periodically distribute 5 in. × 3 in. cards on which appear full bibliographical details of recently published works together with a summary and contents list. An invaluable service.

It is also useful to peruse *Technical Books*, issued by the Publishers' Circular, Ltd., which lists English and American technical books published over a period of twelve months. This list is not only classified but also contains short annotations.

Other sources used regularly include the *Technical Book Review Index*, published monthly except July and August by the Special Libraries Association of America, which lists scientific and technical books with extracts from reviews which have appeared in the Press. These are helpful in evaluating a particular work. The entries are not classified and appear under authors alphabetically arranged. A similar British publication is the *Technical Book Review*, published in alternate months by Century Press, Ltd. In this appear lengthy reviews specially prepared for that publication in addition to a classified list of most recent books. Another useful bi-monthly list, with brief reviews, is *New Technical Books: A list of additions to the New York Public Library*. Details are arranged alphabetically under broad subject headings. And, of course, many other publications similar to those described could be mentioned.

The *Cumulative Book Index*, published by the H. W. Wilson Company of New York, 'a World List of Books in the English Language', is a further medium for book selection. Owing to the numerous entries, however, and the wide coverage, it is a laborious task each month to examine this *Index* for those works of a scientific or technical nature which might be worth noting.

One should also bear in mind *Aslib Book-List: a monthly list of recommended scientific and technical books with annotations*.

The *British National Bibliography* is more useful in this respect, although it should be remembered that, apart from British publications, it includes only those American works which are issued in this country.

Then, of course, many technical journals contain lists of new books or reviews of them, and if one has time they are worth examination.

Whichever medium is used, however, it is a little difficult to assess the qualities or usefulness of a publication merely from brief bibliographical details and one can very easily be misled by publishers' 'blurbs'. Quite often one reads on the flaps of dust jackets the words 'the first book to be published on this subject'. It is a source of amusement to me to read this sort of announcement when I am aware of several other works dealing with precisely the same subject. One is able though, after some experience, to gauge the quality of works by many means, e.g. knowing the technical or scientific attainment of authors, and perhaps the standing of the publisher. A sure method is to be able to examine the books before purchase, and a reputable technical bookseller can be encouraged to send on approval those books which he thinks might fall within the scope of the particular library with which he is dealing. I have such a scheme in operation myself and, whilst I have to return many books as being unsuitable, on the whole it works well.

A librarian should guard against the purchase of *all* new books published within his field for many reasons, and three very good ones are: (*a*) there is so much duplication of subject matter, (*b*) most librarians have to work to a fixed budget, and (*c*) shelves can very quickly be overloaded if withdrawals from stock are not made regularly. It should therefore be a librarian's aim to purchase the 'cream' of the literature published within his field, always bearing in mind the definite needs of his specialized readers and, of course, readers' suggestions.

The development of science and technology in this century is so rapid that quite often information which appears in text-books is hopelessly out of date when published. Our experience shows that information required by engineers is more likely to be that which will be published tomorrow than that which has already appeared, and in this connection it is vitally necessary for a specialized library to maintain files of the more important periodical literature appertaining to its subject.

In selecting periodicals for a mechanical engineering library one is faced with more or less the same difficulties as with the selection of text-books owing to the very wide boundaries of the subject. There are, of course, certain 'musts'. It would doubtless be wrong to overlook the foremost general engineering journals such as *The Engineer, Engineering, Machinery, Mechanical World, Mechanical Engineering,* and so on, but one should not omit the addition of the more specialized publications such as *Power and Works Engineer, Oil Engine and Gas Turbine, Fluid Handling, Nuclear Engineering, Scientific Lubrication, Journal of Scientific Instruments, Steam Engineer* and *Journal of Engineering Education*, for example. In fact, in the reading room of the Institution of Mechanical Engineers are exhibited the current issues of some 400 periodical publications, all of which in some way are related to the subject of mechanical engineering.

Owing to limited accommodation it is naturally out of the question to bind for permanent preservation every periodical publication filed in our reading room, even if it were desired. It is necessary, therefore, to make a careful selection of the publications available. Many factors should be taken into consideration in this connection. The amount of time which can be allocated to literature searching is limited by the volume of work handled and sometimes staff shortage, and one of the factors which we take into account when considering a particular journal for binding is whether or not its contents are covered by the more important bibliographical reference works. I know that most periodicals now contain indexes to each volume, but many of these are poorly compiled and if by reference to one combined index one can cover the contents of numerous publications so much the better. I would here stress how desirable it is that all publishers should send copies of their periodicals regularly to the Engineering Societies Library, New York, in order that these may be considered for indexing in *The Engineering Index*.

Other factors to be considered are: subject matter covered, quality of contents, quality of paper—I remember one periodical which though quite good in content was, to keep the price down, printed on such poor quality paper that it was doubtful whether it would last as a book for more than five years—demand by readers, and availability or non-availability elsewhere. It is therefore very necessary to revise one's actions in this matter periodically.

As I have said, science and technology have changed and are changing rapidly, so that what might have been considered worth preserving some twenty years ago may not now be quite so important. We see subjects develop, such as nuclear engineering, automation and automatic control, and it must be a librarian's duty to meet the needs of readers by filing both books and periodicals on these newer subjects. In fact one must not stagnate but be ever ready to anticipate the needs of readers and be prepared to change a policy if present conditions demand it.

Periodical literature can be an expensive item in a librarian's budget, and particularly does this apply to foreign literature. For instance, the domestic subscription to some American journals may be 5 dollars, but this is multiplied as much as five times to subscribers in Europe. Scientific and learned societies which produce their own publications overcome this expense by an interchange of publications. Foreign literature should not be overlooked and it is as well to endeavour to file the more important journals covering the specialized field from all foreign countries. In addition it is as well not to overlook the many first-class house journals. To name a few examples, there are *The Ball Bearing Journal*, published by the Skefko Ball Bearing Co., Ltd., *The Sulzer Technical Review*, published by Sulzer Bros., *General Motors Engineering Journal*, *Brown Boveri Review*, issued by Brown Boveri, Ltd., and nearer home the *Metropolitan-Vickers Gazette*, issued by the Metropolitan-Vickers Electrical Co., Ltd., and *The Brush Group Technical Journal*. In addition, a large number of universities and colleges throughout the world publish the results of their research in regular bulletins—an invaluable source of information. Some which readily come to mind are the University of Illinois Engineering Experiment Station, the Engineering Experiment Station of Purdue University, Chalmers Tekniska Hogskolas *Handlingar*, *Bulletin of Mechanical Engineering Education* issued by the Manchester Municipal College of Technology, and the Kyoto University Engineering Research Institute *Technical Reports*.

One should not dismiss periodical literature without discussing the availability of the journals, transactions and proceedings of various learned societies. In the mechanical engineering field the obvious choice for me as a starting point are the publications of the Institution of Mechanical Engineers.

Firstly, anyone wishing both to study mechanical engineering from an historical aspect and to follow the science through to its latest developments such as nuclear engineering could not do better than refer to a file of the Institution of Mechanical Engineers *Proceedings* which have been published regularly since the foundation of the Institution in 1847. The first fifty years of the papers in these *Proceedings* have in fact been adequately summarized in *A history of the Institution of Mechanical Engineers*, by R. H. Parsons, published in 1947 as a centenary volume. General indexes to these papers are also published every ten years and a cumulative *Brief subject and author index* is published annually.

In 1947 the Institution of Automobile Engineers was incorporated with the Institution of Mechanical Engineers, and the *Proceedings* of the Automobile Division represent a continuation of the *Proceedings* formerly issued by the Institution of Automobile Engineers.

The Institution frequently arranges conferences on specific subjects and these papers are published in separate volumes. For instance, in 1937 a very useful collection of papers was presented at the General Discussion on Lubrication and these were published in two volumes which have been constantly referred to since. The subject matter is again to be reviewed in a further conference to be held in 1957. Other important subjects which have been dealt with by the Institution in this way are: steam turbines, hydraulic servo-mechanisms, heat transfer, hydraulic mechanisms, combustion, and the fatigue of metals. Subjects for future conferences are: the mechanical engineer's contribution to clean air, the properties of materials at high rates of strain, and the technology of engineering manufacture. It is evident from the foregoing that much valuable literature in the field of technology emanates from this Institution.

I would add further that many librarians may find the list of additions to the library printed each month in the journal of the Institution, namely, *The Chartered Mechanical Engineer*, of much value for book selection purposes. In this monthly publication also appear summaries of the various papers to be discussed at Institution meetings.

Another society whose publications are constantly referred to in our library is the American Society of Mechanical Engineers. Not all of the numerous papers delivered to this society are published in their regular publications, namely, their *Transactions* and *Mechanical Engineering*. I find it necessary, therefore, to file the papers in preprint form as well, so that I am able to maintain a complete file. These preprints, of which there are about 500 issued each year, cost approximately £40. Other publications available from the A.S.M.E. are in the form of Power Test Codes, Boiler Codes and Research Reports. In fact I would say that the publications of both the Institution of Mechanical Engineers and of the American Society of Mechanical Engineers are among the most widely used publications in my library.

The number of societies whose publications are of some value are far too numerous to mention here, but let me indicate one or two of the more specific, or perhaps lesser known. For papers on the subject of strength and elasticity of materials it is well to keep in mind the *Proceedings* of the Society for Experimental Stress Analysis, of Cambridge, Mass. Prior to the appearance of books on the subject of strain gauges it was found that these *Proceedings* were the best source of information on this subject. And in the same subject field one calls to mind the publication *Non-Destructive Testing* published by the Society for Non-Destructive Testing, of Skokie, Illinois. Other societies devoted to specific subjects which are perhaps less widely known are the Heat Transfer and Fluid Mechanics Institute, of Stanford, California, the Hydraulic Institute, of New York, the Industrial Fasteners Institute, the Institute of the Aeronautical Sciences, Midwestern Conference on Fluid Mechanics, and the National Conference on Industrial Hydraulics, whose publications contain some excellent practical papers. All of these are American organizations.

Similar British societies, that is those who concern themselves with specific subjects, are the British Hydromechanics Research Association, the British Welding Research Association, the Diesel Engineers and Users Association, the Institute of Metal Finishing, the British Nuclear Energy Conference, which was recently formed by the Institutions of Mechanical, Civil, Electrical and Chemical Engineers and the Institute of Physics, the contributions to which are published in a quarterly *Journal*, the Institution of Body Engineers (automobile bodies, of course), the Joint Committee on Materials and Their Testing, the National Institute of Agricultural Engineering, the Newcomen Society, which is devoted to the study of the history of engineering, the Society of Industrial

Engineers, the Society of Instrument Technology, the Stephenson Locomotive Society, and many others. I have deliberately omitted in these lists the more widely known societies because I am sure you will be familiar with them.

Of the important foreign societies whose publications cover the field of mechanical engineering and its related subjects perhaps I should refer to the South African Institution of Mechanical Engineers, the Institution of Engineers, Australia, Osterreichischer Ingenieur- und Architekten-Verein, the International Railway Congress Association of Belgium, the Engineering Institute of Canada, Academie des Sciences, of France, the Verein Deutscher Ingenieure, the Koninklijk Instituut van Ingenieurs, of Holland, the Institution of Engineers, India, Associazione Nazionale Ingegneri ed Architetti Italiani, the Japan Society of Mechanical Engineers, the New Zealand Institution of Engineers, the Institute for Mechanical Research of the U.S.S.R. Academy of Sciences, the Royal Institute of Technology, of Stockholm, and the Schweizerischer Ingenieur- und Architekten-Verein, of Zurich.

It must be realized, of course, that the publications of the societies mentioned are not all of equal importance or standing. To give an evaluation of each would be a task too large to be undertaken here.

Important literature in the form of regularly issued research reports is being made available from trade research organizations such as the Motor Industry Research Association, the British Electrical and Allied Industries Research Association, the British Coal Utilisation Research Association, the British Shipbuilding Research Association, and many others. Many such reports are, however, only available to members of the particular organization concerned, but others are freely distributed to bona fide bodies.

When discussing the availability of periodical literature one should not forget the enormous resources available to most libraries through the excellent services of the Science Museum Library, the National Central Library and similar interloan facilities. After all, if some publications are available elsewhere, when a librarian has little shelving space this should perhaps be preserved for those publications which are not so readily accessible. In this connection one can readily discover the location of specific periodicals by reference to such publications as *The world list of scientific periodicals*, the *British union-catalogue of periodicals*, the *Hand list of short titles of current periodicals in the Science Library*, various Union Lists such as that issued by Aslib Engineering Group, and so on.

BIBLIOGRAPHICAL REFERENCE WORKS

Having selected the material one now needs to think about the necessary tools to use that material, and in that category one immediately brings to mind library catalogues and bibliographical reference works.

I do not consider it my function in this lecture to consider the relative merits of different types of catalogue or cataloguing methods—that could well be covered by a separate talk.

I do, however, feel that some of the more important bibliographical reference works should receive mention. In my opinion one of the most useful of this kind is *The Engineering Index*, which I mentioned earlier. The volumes of this invaluable publication are in constant use in our library and I feel there is no other publication in existence at present which does the job so well and so completely. I once crossed swords with the well-known librarian of a Government department library who mentioned in a discussion that *The Engineering Index* was useless as it was incomplete. It was very obvious to me that the person concerned was one who talks and writes a lot about the tools of librarians but one who never *uses* them. Unfortunately there are many such librarians and their comments can as a result be misleading. I can assure you that without the use of *The Engineering Index* it would be difficult for me as a librarian to provide the information required by our users. For those of you to whom this publication may be new perhaps it might be pertinent to describe this service.

The Engineering Index Service is an American service. It is naturally expensive. One is able to obtain an annual bound volume which contains references to periodical literature published during the year for about 60 dollars. It is also possible to be provided periodically with sets of index cards containing the information in the same form as that printed in the bound volumes but relating only to specific subject divisions. This latter service is, however, infinitely more expensive. The advantages of the card system are obvious; it is possible to receive the information much more quickly and a cumulative card index can be built up from them. Nevertheless I file the bound volume, which contains perhaps 50,000 to 60,000 references from between 2,000 and 3,000 periodicals. It is more than an index, as each article indexed is given a brief annotation—these quite frequently giving the user an indication of whether or not the original article need be examined. Entries are arranged alphabetically under subject headings and cross-referenced where necessary and speedy reference is thus possible when searching for literature.

Since 1928 the volumes have been provided with author indexes, and believe me this addition has greatly added to the usefulness of the index. Incidentally I might mention that *The Engineering Index* has been in existence since 1892. I know that it is not absolutely complete coverage—can any service possibly be so?—but I am confident that no other in the engineering field does the job so well.

Another useful bibliographical reference work, also American, is the *Industrial Arts Index*, published by the H. W. Wilson Company. As the title implies, this index covers far more than the engineering field. Like *The Engineering Index*, it is arranged under subject headings alphabetically. There are, however, no annotations and the number of publications indexed is not nearly as great. An advantage, nevertheless, is that in addition to an annual bound volume one is provided with loose monthly issues, these being cumulative as the year progresses. Thus it is a service which is kept up to date. The subscription to this service is based on the number of journals indexed which are filed by the subscribing library, so that it differs from one organization to another.

In searching for information it is frequently necessary to refer to the more specialized abstracting services, and perhaps I should mention a few of the more important publications which are much used in our library.

Fuel Abstracts, compiled by the Fuel Research Station of the Department of Scientific and Industrial Research and published by H.M. Stationery Office, contains good lengthy abstracts and is published monthly to make up two volumes a year, with six-monthly author and subject indexes. An excellent publication.

A similar publication compiled by another Government department, the Ministry of Supply, is *Index Aeronauticus*. The arrangement and system of classification in this makes for rather more difficult reference, and as a result is less used by library staff, who generally have to find information quickly.

Then there are numerous special subject abstracting services published by various institutions and societies, research organizations and trade associations. Some useful works which readily come to mind are *Monthly Summary of Automobile Engineering Literature*, published by the Motor Industry Research Association; *Marine Engineering and Shipbuilding Abstracts*, published by the Institute of Marine Engineers; *Applied Mechanics Reviews*, issued by the American Society of Mechanical Engineers; British Cast Iron Research Association *Abstracts*; *British Ceramic Abstracts*, issued by the British Ceramic Society; British Shipbuilding Research Association *Abstracts*; *Corrosion Abstracts*, published by the National Association of Corrosion Engineers of America; *The Engineers' Digest*, a monthly periodical which reviews world engineering progress. Lengthy abstracts of articles from foreign literature are printed, and the publication also contains more condensed abstracts which are classified under their subject matter. *Management Abstracts*, published by the British Institute of Management; *Metallurgical Abstracts*, compiled by the Institute of Metals; *Refrigeration Abstracts*, issued by the American Society of Refrigerating Engineers; *Subject Index to Periodicals*, published by the Library Association; *Science Abstracts*; *Physics* and *Electrical*, compiled jointly by the Institution of Electrical Engineers and the Physical Society; *Nuclear Science Abstracts*, issued by the Technical Information Service Extension of the United States Atomic Energy Commission; and so I could go on listing the numerous publications which all help the research worker or librarian to trace what literature has been published on a particular subject.

There seems to me, however, a very great need for some of these British organizations to get together perhaps with the Americans to co-operate in producing a complete international index to engineering instead of the multitudinous publications in which there is so much duplication of effort.

Whilst on the subject of bibliographies I feel it would be remiss of me not to call your attention to the excellent series of bibliographies on specific subjects prepared and issued respectively by the Science Museum Library, South Kensington, the Sheffield City Libraries, the Engineering

Societies Library, New York, and other organizations. A few of the subjects covered by these bibliographies are: pneumatic conveying, the use of geothermic power, domestic and industrial applications of solar heating, machinery foundations, non-metallic bearings, precision investment casting, extrusion of steel, chain-making machines, the manufacture of steel tubes, cold pressing, shell moulding, and many others.

Engineers frequently require information of an historical nature and there are very few bibliographical reference works of which I am aware that cover the field of technology prior to 1892, when *The Engineering Index* first began publication. One to which I would call your attention is a German publication originally prepared by the German Patent Office, namely *Repertorium der Technischen Literatur*. The first volume of this publication covered international literature back to 1823 and the early volumes of this publication have been much used in my library. It is, of course, in the German language but can be used with good effect by the non-linguist provided he is able to obtain a German equivalent of the English subject heading on which references to literature are required.

Theses are another form of information not generally easily accessible; these usually report the results of some valuable individual research work. Two publications dealing with this material are the D.S.I.R. *Scientific Research in British Universities* published annually, the first of which appeared in 1951–2, and the annual *Index to Theses* compiled and issued by Aslib, which commenced publication in 1950–1.

Even from these few notes of mine on abstracting and bibliographical services one is able to obtain some idea of the considerable number of services available in which, as I said earlier, there must be a tremendous amount of duplication of effort. Any student wishing to go into this matter further would be well advised to consult the *Bibliography of Abstracting Services*, edited by M. M. Landuyt, and published in 1955 by the Special Libraries Association, New York.

REFERENCE MATERIAL

In a library covering a special field of technology and science there is always the necessity to file many important works of reference, and I should like to call your attention to a few such works which I personally have found to be of much value when searching for specific information. They are:

The International Critical Tables of Numerical Data.

A very useful collection of volumes though now in much need of revision to include more recent calculations.

Handbook of Chemistry and Physics, edited by C. D. Hodgman.

This work is valuable in that it is revised frequently to include latest information available. It was first published in 1924 and is now in its thirty-seventh edition.

'Hütte', Des Ingenieurs Taschenbuch.

Now in its twenty-eighth edition and extremely useful particularly for continental practice.

Kempe's Engineer's Year-Book.
Published annually in two volumes. This work, now in its sixty-first edition, is sometimes referred to as 'the engineers' bible', and is prepared under the direction of the Editor-in-Chief of *The Engineer.* Its contents cover a wide range of general engineering subjects from mathematics and thermodynamics to atomic power, the articles being prepared by individual experts in their field. The second volume contains a very extensive index to the complete work.

Newnes' Engineer's Reference Book.
Frequently revised.

Taschenbuch für den Maschinenbau, edited by H. Dubbel.
Again useful for continental practice.

Kent's Mechanical Engineers' Handbook.
In two volumes, one on Design and Production and the other on Power. Revised periodically.

Machinery's Handbook for Machine Shop and Drafting Room.
First published in 1914 and revised periodically.

Mechanical Engineers' Handbook, edited by L. S. Marks.
One of the best American reference works on engineering. This is also revised periodically.

Production Handbook, edited by L. P. Alford and J. R. Bangs.
Useful for information in the field of manufacturing production.

Tool Engineers Handbook.
Prepared by the American Society of Tool Engineers. It covers all phases of planning, control, design, tooling and operations in the mechanical manufacturing industries. Sections of this handbook have also been issued as separate works.

Air Conditioning Refrigerating Data Book.
Published periodically in two volumes, *Design* and *Applications* respectively, by the American Society of Refrigerating Engineers.

Chemical Engineers Handbook, edited by J. H. Perry.
Extremely useful; a special feature is the inclusion of numerous references to other sources of information.

Piping Handbook, by S. Crocker.
One of the best works on this subject and includes summaries of standards such as those of the American Petroleum Institute.

Thorpe's Dictionary of Applied Chemistry.
In twelve volumes. A standard work of reference.

Engineering Alloys: Names, Properties, Uses, by N. E. Woldman.

Metals Handbook. Prepared by the American Society of Metals.

Heating, Ventilating and Air Conditioning Guide.
Published annually by the American Society of Heating and Air Conditioning Engineers.

Metals Reference Book, in two volumes, edited by C. J. Smithells.

An excellent collection of data in the field of engineering metallurgy and metal physics.

Chemical Engineering Practice, edited by H. W. Cremer.

A work to be published in twelve volumes, which will form an exhaustive collection of data on all chemical engineering processes and operations.

There are, of course, very many more works of a reference nature, some in the pocket-book style, that I could name, most of which could be considered worthy of addition to a specialized library, but I have mentioned just these few and they have been singled out because I can safely say that practically all of them have in practice proved their worth.

Users of a specialized library will always be requiring information that can only be supplied by reference to directories, and here again I consider it worth while to call your attention to those which, in practice, have been found to be most informative.

Ryland's Coal, Iron, Steel, Tinplate, Metal, Engineering, Foundry, Hardware and Allied Trades Directory.

This invaluable directory is issued every two years and is a 'must' in every engineering library. Although it is classified I strongly recommend the use of its general index, which is very complete.

A useful American directory covering similar ground is

Thomas' Register of American Manufacturers, the current issue of which is published in five volumes, the fifth volume being a complete index.

For German engineering products I think I cannot do better than to refer you to the

Official Export Register of the Bundesrepublik Deutschland and Berlin-West, issued by the Federation of German Industries, or B.D.I., as it is known in Germany. This is printed in four languages, English, French, German and Spanish, and as such forms a useful four-language technical dictionary, as well as a complete trade directory. In fact I have been able from this directory to obtain the German equivalent of an English composite term which was not available in any of the technical dictionaries at my disposal—and I might say I have a good selection of these.

I have given these three directories special mention because experience has shown that they are, in fact, of great value.

Numerous other useful directories are available, a few of which are quoted:

F.B.I. Register of British Manufacturers, issued annually by the Federation of British Industries.

Classified Handbook of Members and Their Manufactures, published annually by the British Engineers' Association.

The Engineer Buyers Guide, issued annually to subscribers to the periodical *The Engineer*.

The Stock Exchange Official Year-Book, published annually.

Kelly's Directory of Merchants, Manufacturers and Shippers, published annually.

Machinery's Annual Buyers' Guide.

These, of course, are general directories and there are very many other specialized directories which are worth bearing in mind, these on occasion being more useful than directories of a general character in that they are generally more specifically classified. Details of a selection follow:

Directory of Shipowners, Shipbuilders and Marine Engineers, published annually.

Mining Year Book, also an annual.

The Gas Journal Calendar and Directory, published annually by the periodical *Gas Journal.*

The Gauge and Tool Makers' Association Handbook, revised periodically.

Directory of Railway Officials and Year Book, an annual.

The Trader Handbook for the Motor, Motor Cycle and Cycle Trades, published annually.

The Electrical Trades Directory, or, as it is commonly known, 'The Blue Book'. Also an annual.

'Aeroplane' Directory of British Aviation. An annual publication of the periodical *The Aeroplane.*

Power Transmission Directory and Trades Name Index, issued annually.

Heads and Threads Buyers' Guide, issued by the British Bolt, Nut, Screw and Rivet Federation.

Finishing Handbook and Directory, issued by the periodical *Product Finishing.*

British Petroleum Equipment, published annually by the Council of British Manufacturers of Petroleum Equipment.

British Gear Manufacturers' Association Buyers' Guide.

Hydraulic Machinery and Equipment: A List of Manufacturers, issued by the Hydraulic Association.

British Scientific Instruments: Directory and Handbook of the Scientific Instrument Manufacturers Association of Great Britain.

A Guide to its Members' Activities of the Machine Tool Trades Association of Great Britain.

B.C.A.S. Handbook of Pneumatic Equipment, published by the British Compressed Air Society.

British Pump Manufacturers' Association Buyers' Guide.

British Diesel Engine Catalogue, issued periodically by the British Internal Combustion Engine Manufacturers' Association.

This, though not a complete list, gives some indication of the specialized directories which may be less well known but which are, in fact, invaluable reference works in a specialized library.

MISCELLANEOUS NOTES

It is, I consider, extremely difficult in a lecture of this nature to talk at great length on all the literature in the special field of mechanical engineering. I therefore propose to give some details of particular literature which does not, I think, come in the categories already discussed.

There are certain classics which even today are frequently referred to. Works which come into this class are *The Constructor: A Handbook of Machine Design*, by Franz Reuleaux (translated from the German in 1904). *A Practical Dictionary of Mechanics*, by E. H. Knight, 1875–84. *History of the Theory of Elasticity and of the Strength of Materials*, by Isaac Todhunter and Karl Pearson, 1886–93. *Turning and Mechanical Manipulation on the Lathe*, by C. Holtzapffel, five volumes, 1846–94.

Then there are one or two sixteenth- and seventeenth-century works which are on occasion referred to such as: *De Re Metallica*, by Georgius Agricola, 1556; *Theatrum instrumentorum et machinarum*, by Jacques Besson, 1582; *Le Machine*, by Giovanni Branca, 1629; and *Mathematical Magick or the Wonders that may be performed by Mechanical Geometry*, by J. Wilkins, late Lord Bishop of Chester, 1680.

It is worth while too to remember the usefulness in specialized libraries of general encyclopædias such as *Encyclopædia Britannica*, or Chambers's *Encyclopædia*. One of my assistants recently mentioned how one of these had proved most useful in respect of an inquiry he had received for information on projective geometry; this is an example of just one of the many abstruse inquiries that we receive which are really outside our field.

Patent specifications are another useful source of literature, and I have found the file of the *Abridgments of Specifications* from 1600 of extreme value.

Standard specifications and codes of practice are much used and those issued by the British Standards Institution, the U.S. National Bureau of Standards, the American Standards Association, the American Society for Testing Materials, and others are in constant demand. I have already referred to similar codes issued by the American Society of Mechanical Engineers.

Publications of Government departments reporting results of research carried out in the various Government-sponsored research stations are of immense value. The numerous research stations of the Department of Scientific and Industrial Research, for instance, issue reports regularly, and most of these are obtainable through H.M. Stationery Office. An interesting survey of the work of the D.S.I.R. is given in a recent publication entitled *Combining for research: the work of the Industrial Research Associations in the Government scheme*. The *Reports and Memoranda* of the Advisory Council for Aeronautics of the Ministry of Supply and the Reports and Technical Notes of their American counterpart, the U.S. National Advisory Committee for Aeronautics, commonly referred to as N.A.C.A., are much used.

Trade catalogues are another source of reference. These, however, can become a library of their own, and my experience in endeavouring to maintain such a collection has proved that so much time and space on the shelves can be utilized in this matter that serious consideration should be given to any proposal to start one. I found that manufacturers always kept the library up to date with the less useful price lists of, say, electric lamps, but they had to be constantly reminded to forward copies of the more detailed technical catalogues. We gave up in despair! I am not aware of a file in London of any complete set of trade catalogues of British firms, although I believe sets are maintained in the provinces. The Board of Trade's Export Services Branch house a set of foreign trade catalogues and these are available for reference by any member of the public.

One should always keep in mind too the valuable information contained in papers presented at various international conferences, notably those arranged by the International Congress for Applied Mechanics, the International Internal-Combustion Engine Congress, the International Mechanical Engineering Conference, the World Power Conference and similar organizations.

The sources of technical literature are almost unlimited and an indication of these sources may be obtained from a study of J. E. Holmstrom's excellent treatise entitled *Records and research in engineering and industrial science*, the third edition of which has just been published, and from the author's companion work *Facts, files and action*, to be published in three volumes, the first and second of which have already appeared.

CONCLUSION

It will be observed that I have omitted to quote the full bibliographical details of the numerous publications to which I have referred throughout this lecture. Works of reference from which full details of periodical publications can be obtained are:

Willings Press Guide.

This annual publication, in addition to an alphabetical list of British periodicals, also contains a classified list and lists of Dominion, Colonial and foreign publications.

The Newspaper Press Directory and Advertisers' Guide.

Also an annual of similar scope to the aforementioned, but with a little more detail.

Ulrich's Periodicals Directory.

Issued triennially. Probably the most complete directory of its kind. Data is included on price, date of origin, frequency of issue, publishers, whether there are reviews, abstracts, illustrations, annual indexes, etc., and whether indexed in a cumulative index service. It includes all major periodicals grouped under some 150 subject headings with a cross-referenced index to titles and subjects. It is an American publication published by the R. R. Bowker Company, of New York.

When planning this lecture I fully realized that I was undertaking a task of some magnitude because of the wide field which mechanical engineering covers, and I found it difficult to decide what to include and what to omit. Anyway, I have talked about those publications which I have considered, after some years of experience, to be of value in my everyday work. If thereby I have been able to draw to the attention of some of you a new source of literature, then I feel that my task has been worth while.

THE NATIONAL CENTRAL LIBRARY

1ST MARCH, 1955, TO 28TH FEBRUARY, 1956

BY IRENE FELTWELL, A.L.A.
National Central Library

THE Fortieth Annual Report of the National Central Library once again records a year of great activity in the various departments of the Library and continued expansion of the resources available by the addition of new names to the list of 'outlier libraries' and by wider international contacts.

The results of considerable committee activity are given early in the report. A far-reaching decision has been made on the recommendation of the Implementation Committee. This provides that the National Union Catalogue, which is compiled from duplicate entries of the regional union catalogues, shall cease to record British books included in the British National Bibliography from 1st January, 1958. It was also recommended and accepted that each region should have its own Union Catalogue which is kept up to date, and in addition it is hoped that each region will be self-sufficient as far as current material recorded in the British National Bibliography is concerned. The National Union Catalogue and the arrears of entries to be incorporated, now amounting to 409,741, have been a problem for some years. During the last year the arrears increased by 34,026 slips, although 47,070 slips were inserted. The catalogue will now be completed and continue to receive entries for books published prior to 1958.

The Implementation Committee has also recommended that the inter-lending of books from the reference departments of public libraries should be more liberal and has considered the difficulties of special libraries in the London and south-eastern areas who are not members of a regional system. The Library has agreed to use discretion in accepting applications from these special libraries for material which is in print and below the new price limit of 25*s.* but above the former limit of 12*s.* 6*d.* The question of joint fiction reserves is still being considered by the committee, which is examining the possibility of a national scheme which may prove more effective and economical than regional schemes.

The total applications received were 92,688, compared with 97,269 for the previous year. One of the reasons for this decrease may be that individual libraries and the regions are becoming more self-sufficient and that therefore a higher proportion of the applications is for earlier, rare and more specialized material. If this is so, it is likely that the percentage of applications successfully dealt with will also decrease, as has in fact happened. The figures are 70.67 per cent. as against 71.49 per cent. for the previous year. The number of separate volumes issued from or through the Library was 93,708, a decrease of 6,451.

Apart from the London borough libraries, the Yorkshire region and the Northern region, each region records fewer loans both within its own system and outside the system. The total figures are 176,813 loans within the system, compared with 178,835 for the previous year, and 25,278 loans outside the system, compared with 27,542. Once more the university libraries have given valuable assistance and they supplied 26,466 books to other libraries, 1,175 more than the previous year. They borrowed 15,091 books, being 2,343 fewer. The help given by the 'outlier libraries' is greatly appreciated as much for the information offered by its staff on a library's specialized subject as for the books lent. 'Outlier' and other special libraries lent 22,378 volumes, compared with 24,412 volumes the previous year.

The Executive Committee expresses understandable satisfaction at the continued increase of international loans. This is one of the most important aspects of the Library's work and since the war continued effort has been made to widen its scope. In this connection Pakistan and Uganda may be mentioned as countries to which loans have been made for the first time. During the year under review once again attempts were made to negotiate with Russia, and since this report was published interlending has in fact started. The Librarian was able to comment on this and other aspects of international lending when he was interviewed in 'Radio Newsreel' recently. Loans to libraries abroad including photographic reproductions numbered 2,954, compared with 2,801 for the previous year; volumes borrowed from abroad were 1,539, compared with 1,346.

Work on the Union Catalogues continues. Mention has already been made of the decision regarding the National Union Catalogue and this should mean that in the future the staff will be able to concentrate on maintaining the Outlier Union Catalogue. This catalogue records the holdings of the outlier libraries and 17,524 new entries and 11,227 locations were added. The record of 7,387 'positive' and 8,635 'negative' results of searches were also incorporated. New locations and entries totalling 1,327 were added to the Union Catalogue of Periodicals in Outlier Libraries, together with 726 'negative' entries for material not traced.

The Union Catalogue of German Books and Periodicals published between 1939 and 1945 has been maintained and particularly welcomes notifications from libraries which have succeeded in filling gaps in periodical sets. The Union Catalogue of Russian Books and Periodicals has benefited by a generous grant of £500 made by the Department of Scientific and Industrial Research. This has enabled the Library to continue work on the catalogue and incorporate entries for the holdings of several more specialized libraries. The names of three of these libraries, John Innes Horticultural Library, the Library of the Medical Research Council, and the Library of the Institution of Civil Engineers, give some indication of the useful and specialized material which may now be located by means of this catalogue. Locations for Russian material now number 70,594 volumes of books and pamphlets, 3,641 periodicals (titles), 105,080 periodicals (issues) and 101 newspapers (titles). It is interesting to note that, although the number of applications received fell by 78 to 1,555, the percentage of locations provided increased from 59 per cent. to 62½ per cent.

The Library's book stock, estimated at 150,000 volumes, plays an important part in supplementing the material available for loan from other sources. The committee has expressed its gratitude for the many gifts received. Privately printed works and limited editions are not usually readily available in co-operating libraries and gifts of such works are therefore particularly welcome. Mention is made of the Library's policy of procuring out-of-print and scarcer works which have not proved available for loan and of improving the provision of works of bibliographical reference.

The Adult Class Department records the purchase of a smaller number of volumes, the result of a tendency to purchase rather more expensive works. This may be one of the factors accounting for the issue of 14,264 volumes as compared with the previous year's total of 15,736, a drop of about 9 per cent. Even so, it is likely that this department is giving a more useful service by supplying fewer works which are more difficult to obtain, rather than a larger number of works which may be bought for several shillings. The special committee formed to conduct an inquiry into book provision for adult classes has prepared a report, details of which have subsequently been published.

The British National Book Centre arranged the redistribution of 90,516 books and periodicals, compared with 139,213 for the previous year. Fewer offers were received and more attention could be paid to selection for the lists and the placing of material. All titles offered were checked against the Centre's 'Wants' file and some were circulated among libraries with special interests. About two-thirds of the titles were used for the lists; which contained 20,679 books and 4,861 periodical titles. In addition, two special lists of Scottish interest were also issued. International contacts continue to be widened and the University College of Rhodesia and Nyasaland and the Ramakrishna Library in Fiji are two new co-operating libraries.

The recording of holdings of pre-1800 books in British libraries is continuing: 9,800 more entries have been received and noted in special copies of *Pollard and Redgrave* and *Wing*.

The Executive Committee acknowledges with gratitude the increased grant-in-aid of £38,100 from the Lords Commissioners of Her Majesty's Treasury. Appreciation is also expressed for the contributions from libraries, adult class organizations and individual donors of sums amounting to a total of £5,394 5*s*. 8*d*. Once again the committee is indebted to the Cassell Educational Trust for the grant of £250 for books for the Adult Class Department, to the British Council for the sum of £175 towards the cost of international lending, and to the Central Joint Advisory Committee on Tutorial Classes for the increased contribution of £50.

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All the above items may be borrowed from Aslib Library, except for those marked with an asterisk. These are mostly available for consultation in the Library, apart from a few for which locations in other libraries can be given by the Librarian.

NEW ELECTED MEMBERS

Corporate

American Viscose Corporation	E. I. Hoegberg
Atherton Public Library	Fred Howard
Aviation and Engineering Projects, Ltd.	C. R. Chronander
Australia. Sheep Biology Laboratory (C.S.I.R.O.)	The Librarian
Balston. W. & R., Ltd.,	Miss P. M. Marsden
Bell's Asbestos & Engineering (Holdings), Ltd.	David Asdell
Birkenhead Public Libraries	G. Stratton
Books & Careers	C. S. Gill
British Olivetti, Ltd.	F. Beddow

NEW MEMBERS: *continued*

Burgess Products Company, Ltd.	E. J L. Cotton
Cambridge City Libraries	E. Cave
Cardiganshire County Library	A. R. Edwards
Carbonum, Ltd	R. G. Childs
Consett Iron Co., Ltd.	I. Bates
Crompton Parkinson, Ltd.	B. G. Watts
Darwen Public Library	Arnold Holden
Dumfriesshire Libraries, The	Mrs. M. D McLean
Esso Petroleum Company, Ltd	H. P. Hodge
Ewart, M. D, & Co., Ltd	
Falkirk Public Library	Mrs. C. H. Brown
Florida State University Library	Adelaide S. Maner
Globe-Union Incorporated	Jack Baltes
Hills (West Bromwich), Ltd	J. Thomson
Huddersfield Public Libraries	S. T. Dibnam
Institute of Practitioners in Advertising	John C. Braun
Iota Services, Ltd.	R C. Hennessy
Kettering Public Library	J. S Burden
Kilgour, George Barclay	
Lawrence Radice, Ltd.	Roy L. Punnett
Lindsey & Holland County Library	A. C. Curtis
Luton and South Beds College of Further Education	Ian Rogerson
Mansfield Public Library	Donald Shapland
Merthyr Tydfil Public Libraries	Miss M. S. Taylor
Middleton Public Library	F. Atkinson
Mirrlees Watson Co., Ltd.	D. M. Semple
National Liberal Club	G E. V. Awdry
National Smoke Abatement Society	H. C. F. Kapps
Oxfordshire County Library	Miss M. Stanley-Smith
Reddish Chemical Co, Ltd.	B. Hughes
Rolls-Royce, Ltd.	A. C. Firth
Royal Air Force, Headquarters, No. 24 Group	Group-Capt F. J. Pryer
Rutherglen Public Library	Miss J. B. Lees
St. Helens Public Libraries	H. C. Caistor
Sales Research Services, Ltd.	W. N. Coglan
Scunthorpe Public Libraries	J. H. E. Biggs
Sheffield University, Applied Science Library	G. C. J. Stoneham
Southall Public Libraries	H. V. Jordan
Stepney Public Libraries	Herbert Ward
Taylor Woodrow, Ltd.	N. Fletcher
Tobacco Manufacturers' Standing Committee	C. H. James
Topley, P. J.	
Toronto, University of	Miss Bertha Basham
United Turkey Red Co, Ltd., The	R. J. Skelton
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Doo, N C
Dunman, Maurice William
Gordon, Miss Elizabeth H
Hollander, Miss M. E
Ingham, J. L.
Minter, D. L.
Stein, Charles Meyer

ASLIB INFORMATION

Aslib Calendar

WINTER MEETINGS at the Royal Society of Arts, 8 John Adam Street, Adelphi, London, W.C.2.
Tuesday 5th and Friday 29th March. See para. below.
Thursday 25th April. Mr. W. R. Robertson, Public Relations Officer, London Transport Executive, will speak on the public relations work of London Transport

AERONAUTICAL GROUP Conference at the College of Aeronautics, Cranfield, Bucks, 5th–7th April.

CHEMICAL GROUP. Annual General Meeting, Wednesday 27th February

ASLIB ANNUAL CONFERENCE at the Grand Hotel, Scarborough, 20th–22nd May
Aslib Annual General Meeting, Scarborough, 22nd May

New Year Honours

Members will have heard with pleasure that Sir Raymond Streat, C.B.E., President of Aslib, was appointed K.B.E. in the New Year Honours list. Sir Raymond became President in 1955 and is serving his second year of office. He is also Treasurer of Manchester University and Visiting Fellow, Nuffield College, Oxford. He has taken an active interest in the work of Aslib and the announcement of this new honour gives great pleasure to the Association. We offer him sincere congratulations and good wishes.

We congratulate also Miss K. L. M. Simpson, formerly Press Librarian, Royal Institute of International Affairs, who received the O.B.E. Miss Simpson is now Assistant Editor, Special Historical Section—Captured German Archives, Foreign Office Library.

Aslib Winter Meetings

The next meeting will be held at 6 p.m. on Tuesday 5th March at the Royal Society of Arts, John Adam Street, Strand, London, W.C.2. Tea will be served at 5.30 p.m.

Dr. D. C. Martin B.SC., F.R.S.E. Assistant Secretary of the Royal Society, will speak on the Society's interest in scientific publications and the dissemination of information. Following a brief historical introduction, he will give an outline of the activities of the Royal Society, with special reference to its publications, which began with the *Philosophical Transactions*, first issued in 1665. He will also describe the policies governing the Society's library and the Society's interest in information services.

On Friday 29th March Mr. H. C. Richardson, A.L.A. Librarian, The Institution of Civil Engineers, will speak on the reclassification of his library. He will describe how the many problems involved have been overcome, including recataloguing, the survey and rearrangement of the stock of books and periodicals and the purchase of library furniture. He will also explain the additional facilities now provided by the library. The Chairman will be Mr. Frank H. Smith, Librarian, Royal Aeronautical Society.

Aslib Northern Branch

A joint meeting of the Manchester and District Special Librarians

Discussion Group and the Northern Branch of Aslib was held on Monday 19th November 1956 in the Central Library, Manchester. Mr. D. Ball, F.L.A., Technical Documentation Officer, Liverpool Public Libraries, spoke on 'Co-operation between public and special libraries'.

The Branch Annual General Meeting was held on Friday 25th January.

Aslib Chemical Group

The Annual General Meeting of the Group will be held at 3 p.m. on 27th February at the Royal Institute of Chemistry, 30 Russell Square, London, W.1.

After the business meeting Mr. R. Staveley, a lecturer at the School of Librarianship and Archives, University College, London, will address the Group on 'The reader, the writer, and copyright law'.

Members who wish to attend are asked to inform the Hon. Secretary, Mr. E. F. Broome, County Laboratories, Ltd., Honeypot Lane, Stanmore, Middlesex.

Electrical Translators' Section

A party from the Section will visit the Computational Laboratory, Birkbeck College, London, at 3 p.m. on 4th April by kind permission of Dr. A. D. Booth.

The number of the party will be limited and members who wish to join it should write to Dr. M. Goyer, the Library, Royal Aircraft Establishment, Westcott, nr. Aylesbury, Bucks, before 4th March.

Dr. Alexander King

Dr. Alexander King, B.SC., has recently left the Department of Scientific and Industrial Research, where he was Chief Scientist, Intelligence and Overseas Scientific Liaison Divisions, and has become Deputy Director of the European Productivity Agency in Paris. He has consequently resigned from the Aslib Council, Professional Board, and International Relations Committee. Aslib is grateful for the valuable help that Dr. King has given to these bodies and wishes him success in his new appointment. He will continue as President of the Fédération Internationale de Documentation.

International Study Conference on Classification for Information Retrieval

Aslib is organizing this conference at the request of the Fédération Internationale de Documentation, with the co-operation of the Classification Research Group and the School of Librarianship and Archives of London University. The object of the Conference is to bring together experts who are doing research on different methods of information retrieval, so that they can reconsider the whole problem and compare different lines of research. The Conference will therefore be limited to some forty invited persons. It will be held from 13th to 17th May 1957 at a residential conference centre near London. Those contributing papers include Dr. N. T. Ball, Mr. E. J. Coates, Mr. J. E. L. Farradane, Mr. E. de Grolier, Mr. J. Mills, Dr. L. R. Ranganathan, Prof. J. Shera, and Mr. B. C. Vickery.

Register of Information Officers

Members will recall that a statement about a scheme for establishing a Register of Information Officers was circulated in July, 1956, and comments were invited. Only 103 letters were received, 20 being in favour of the proposals as presented, a further 24 supporting the case for a qualification of some kind but not satisfied with the Register scheme, and 59 opposing the establishment of any qualification by Aslib.

The Council would now welcome the fullest discussion of the proposals and it is intended to give members every opportunity of expressing their views during the Annual General Meeting to be held at Scarborough on 22nd May, 1957. This occasion has been chosen because some 200–300 members normally attend the Annual Conference, during which the Annual General Meeting is to be held, and a gathering representative of the membership should thus be ensured. To encourage debate—both at the General Meeting and possibly at meetings to be organized in the meanwhile, if they wish, by branches and groups—two papers supporting the Register and two opposing it are being circulated, together with a factual statement by the Director on the genesis of the proposals, to all members with this issue of *Aslib Proceedings*. It is hoped that these expositions will help members to decide their attitude towards a development which is known to engender strong views both among its supporters and its opponents.

Aslib Courses on Information Work

The Education Committee has planned an introductory course to Information work for graduates or other staff of comparable seniority entering information work. It will run from 8th to 12th April. There will be 10 or 11 lectures and three visits to libraries as well as practical work. To ensure that participants gain the fullest benefit, the course will be limited to 30 students. Fee: 7 gns.

Plans are being made for an introductory course to information work for junior staff, and it is hoped that such a course will take place in the autumn.

Course on Handling Soviet and East European Material

Aslib has arranged a course of seven evening lectures on handling Soviet and East European library material. The lectures will include practical work as well as two visits to libraries where this material is handled on a large scale.

The lecturer will be Mr. Anthony Thompson, M.A., F.L.A., Assistant Librarian of the Science Museum Library.

Students who take the whole course should become familiar with the Russian alphabet and transliteration schemes in common use. There will be two lectures on Soviet and East European methods of publishing scientific and technical information. Students will also be able to examine appropriate bibliographies, reference books and periodicals.

The lectures will take place at Aslib, 4 Palace Gate, London W.8 at 6.30 p.m. on Thursdays 14th, 21st, 28th March, 4th, 11th April, Wednesday 24th April and Thursday 2nd May. The fee is three guineas for the course or 10*s*. each lecture. Members who are interested should write to Aslib for a syllabus of the course and enrolment form.

Information Retrieval

The Western Reserve University, Cleveland, Ohio, and the Council on Documentation Research, are to sponsor a three-day symposium on systems of information retrieval to be held at the University, commencing 15th April. Information handling problems and techniques will be discussed and twenty or more information systems adapted by their users to meet specific needs may be studied.

A demonstration of systems in use for the organization, storage, and retrieval of recorded information will be presented by the School of Library Science and the Center for Documentation and Communication Research of the University.

A model information centre will demonstrate rapid searching techniques and high-speed transmission methods in obtaining information from co-operating organizations across country and overseas.

U.D.C. Committee

The British Standards Institution has set up a new Panel of its U.D.C. Committee to deal with control, cybernetics, etc. It will work closely with the Electrical Engineering panel. The chairman is Mr. R. A. Fairthorne who also represents Aslib on the committee. Any members who are interested should contact Mr. G. A. Lloyd, British Standards House, 2 Park Street, London, W.1. Telephone MAYfair 9000.

I.M.M. Library

Mr. Lindsay Corbett, Librarian of the Institution of Mining and Metallurgy, 44 Portland Place, London, W.1 invites members of Aslib who may wish to visit the library to call before the end of February. The new library is the major part of the former Joint Library of the I.M.M. and the Institution of Mining Engineers which used to be at Salisbury House in the City. It was divided in 1955 when the two institutions decided to have separate premises.

National Lending Library of Science and Technology

On the 5th January Dr. D. J. Urquhart, D.S.I.R., read a paper to the University and Research Section of the Library Association on the problems involved in planning the proposed new library. This paper will be published in full in the March issue of the *Journal of Documentation*, and Dr. Urquhart will be glad to receive considered suggestions and ideas up to the end of June.

New Bibliographical Journal

The Scottish Group of the University and Research Section of the Library Association has issued a new bibliographical journal entitled *The Bibliotheck*. It publishes bibliographical notes rather than fully developed articles on matters of Scottish interest, provisional check lists and questions which do not require immediate answer. The first issue contains a bibliography of James Leslie Mitchell-Lewis Grassic Gibbon. *Bibliotheck* will be published twice annually at five shillings each issue. Enquiries should be addressed to the Editor, *The Bibliotheck*, The University Library, Glasgow, W.2.

Pharmaceutical Bibliography

Beginning with the issue for January 1957, a new bibliography, 'Drug information sources', compiled by the Pharmaceutical Section of the Special Libraries Association will be published regularly in the *American Journal of Pharmacy*. The bibliography will be an annotated list of drug encyclopedias, codices, dispensatories, price lists and related sources. Each monthly instalment will cover sources from a few countries. The list will be revised in order to keep it up to date.

World List Amendments

A fifth list of amendments to the *World List of Scientific Periodicals* was printed in *Chemistry and Industry*, November 3rd 1956, pages 1260–1265. Members who do not normally see this journal may wish to amend their copies of the *World List* from this issue.

ASLIB INFORMATION

Members' Advertisements

TRANSLATIONS, TECHNICAL AND COMMERCIAL, from German and French promptly executed by experienced man (on Aslib Register of Specialist Translators). H. B. Andrews, 43 Wansunt Road, Bexley, Kent. Bexleyheath 3071.

Situations vacant

APPLICATIONS are invited from CHEMISTS interested in Technical Library and Information Work. Duties will cover all aspects of technical literature and information services relating to rubber and allied materials; the post provides a good opening for anyone desiring a career in this field. Applicants should have a Degree in Chemistry or A.R.I.C. Appointment will be on the Technical Officer Scale (£515 × 30—£830) with starting salary according to age and qualifications, pension scheme. Five-day week; canteen; rented accommodation available. Apply with full particulars of age and qualifications to Secretary RABRM, Shawbury, Shropshire.

ASSISTANT LIBRARIAN AND INFORMATION OFFICER. British Nylon Spinners Ltd., Pontypool, Mon., invites applications to fill this post, the main duties of which will be responsibility for providing information services to members of Research and Technical Development Departments. Candidates should have a science degree and preferably experience in a scientific special library. Starting salaries will be assessed according to qualifications and experience offered. Applications, which will be treated in strict confidence, should give the fullest possible details and be addressed to the Personnel Manager.

B.S.A. GROUP RESEARCH CENTRE invites applications for the post of Assistant Librarian at its new laboratories at Mackadown Lane, Kitts Green, Birmingham 33. Duties include surveys, abstracting and normal library practice. The post would suit a science graduate (25–30), preferably with a knowledge of German, and some previous experience in technical library work. It offers special opportunities of advancement to suitable candidate. Apply to the Director of Research.

GLAXO LABORATORIES LTD, Greenford, Middlesex, require a female operative experienced in modern photo-copying methods and familiar with the OZALID process to take charge of the Copying Section of their Research Division Library. Applicants who should be over the age of 21 must, in addition, have an elementary knowledge of photography. Commencing salary fixed according to ability. Five-day week. Cafeteria. Pension and Incentive Bonus Schemes. Write to Personnel Officer.

SENIOR ASSISTANT required in Central Filing Section of large research laboratory for filing correspondence and records. Good memory, neatness and logic are essential for this position which also requires a knowledge of the basic principles of filing. Pension and Life Assurance scheme in operation. Apply to: Personnel Officer, Aluminium Laboratories, Ltd., Banbury, Oxon.

ABSTRACTOR (Male) required for Bulletin and Central Index. Typing assistance available. Candidates should possess suitable background Engineering subjects, knowledge French, German desirable. Salary according qualifications, experience. Five day week, canteen, pension scheme, sports/social club. Apply in writing stating age, qualifications, experience, Assist. Secy, Babcock & Wilcox Ltd, 209 Euston Road, London, N.W 1.

LIBRARIAN: The Wiggins Teape Group Research Organisation invites application from people capable of leading a small library staff, of controlling existing library work, and of extending the library service in parallel with rapid expansion of the Group's technical effort. The post calls for knowledge of library systems, together with the initiative and diligence to apply them. Preference will be given to applicants experienced in industrial or technical libraries. Please send full particulars to Wiggins Teape Group Research Organisation, Butler's Court, Beaconsfield, Bucks.

MINISTRY OF DEFENCE: INTELLIGENCE OFFICERS, GRADE III. The Civil Commissioners invite applications for posts in the Joint Intelligence Bureau. Age at least 25 on 1st January, 1957. For one of the posts candidates must have become Fellows or Associates of the Library Association or hold the Diploma of the London University School of Librarianship, with considerable experience of library research and knowledge of German. Salary scale £625 to £1,000. The women's salary scale is at present somewhat lower but is being raised to reach equality with men's by 1961. Application forms from Secretary, Civil Service Commission, 6 Burlington Gardens, London, W.1. quoting No. 4663/57/8. Application forms should be returned by 28th February, 1957.

Wanted

Iron and Steel. Issue No. 7, 1954, to complete the files of the library of London Transport Executive at 55 Broadway, London, S.W.1.

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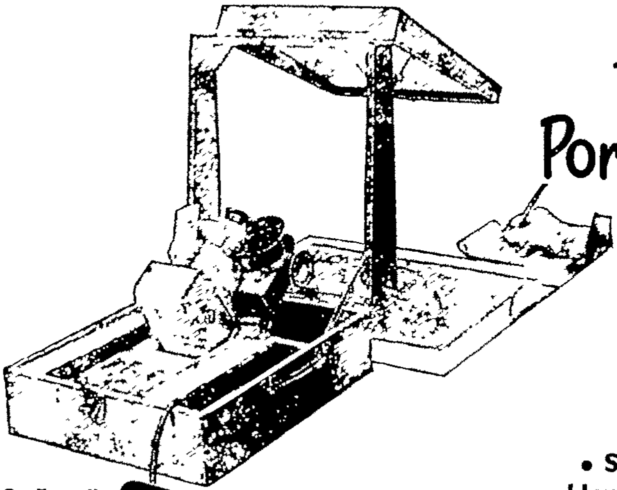

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ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 9 March 1957 Number 3

COMMUNICATION OF SCIENCE BY MEANS OF FILM

BY ANTHONY R. MICHAELIS, PH.D., B.SC., F.R.M.S.

Editor of Discovery

London, 30th January, 1957

DR. A. R. MICHAELIS said that when asked to give this talk he had regarded it as a challenge, because we live today in the second of the important revolutions which have occurred since science began to be properly used. The first revolution, the Industrial Revolution, helped man to get rid of manual drudgery, whereas the second and present one, the 'Informational Revolution', was about to do the same for the mental effort of mankind. The film had a most important part to play in the informational revolution, and he hoped to bring out some of the ways in which it could do so. The film was by no means properly used in this context at present, and further means and money would have to be made available before it could be used as it should be.

INTRODUCTION

To begin with, it was necessary to think clearly about what was meant by 'communication' and about the methods and techniques which were available for the purpose. The first, language, had been used by man for the last 500,000 years. Man had recorded what he had thought for the last 5,000 years. Books had been in existence for 2,000 years, and printed books for the last 500, photography for 100, the film for 60, and television and tape recording for about ten years. Those were the techniques which were available for the communication of thought.

It was interesting to compare the film with the book. The book was written in the privacy of a study or library, and read under similar conditions. The film was made by a team of artists and viewed by a large audience. Those essential differences found their most pronounced expression in the large sum of money which must be spent to make a film, while an author needed little but a knowledge of language, a typewriter and sufficient paper. The publication of a book was very similar to the printing of a film copy and was mainly a mechanical process.

There were other important differences between books and films. The film as a record was unique in recording movement, but it suffered from the fault that it could not portray abstract philosophical ideas. To portray an idea in a film it was necessary to use a sound track, the spoken word; it was not possible to rely on the visual image alone. He had elsewhere* made the suggestion that one day a motion-picture alphabet might well be developed.

It was hardly necessary to emphasize that the alphabet, as we know it today, had been one of the most outstanding inventions of mankind, which allowed any conceivable thought to be communicated. A motion-picture alphabet would have to be based on similar conventions to those of the printed alphabet, and would, like the printed alphabet, have to be learnt. It was a difficult concept, and he did not propose to describe how it could be done; indeed, he did not think that anyone knew. It was, however, a thought well worth bearing in mind as a possible way of conveying abstract philosophical ideas by means of film. It might take the shape of geometrical patterns and of the movement of such patterns. If it could be developed, it should prove of great value to mankind; it would serve for the very rapid and exhaustive communication of the most complex thoughts.

Coming to techniques, he proposed to look at the types of film which were in existence and see how they could communicate science. He proposed to show three types of film to begin with: the research film, the teaching film, and the popular entertainment film. In these types, the communication of science was at three different levels. The first was a communication between scientist and scientist; the second, the teaching film, was between scientist and student; and the third from the scientist to the man in the street. In addition, the film could record the past, and also pre-view the future.

RESEARCH FILM

The research film was used by scientists to gain new knowledge. It was the unique quality of the film, not shared by television or books, that it was a research tool. In normal film making the cine-camera which recorded the action ran at, say, twenty frames per second, and the projector which threw the film on the screen ran at the same speed, so that the action recorded was reproduced on the screen at the same time-scale. It was possible, however, to make the camera move slower or faster than the projector. When the camera moved faster than the projector, 'slow motion' was obtained. This was widely used in industry, engineering and biology to obtain information which the eye could not detect because the action took place too fast. The reverse condition, when the camera moved more slowly than the projector, was called the 'time-lapse' technique and had proved particularly valuable in the study of organisms and cells under the microscope. The technique was simple: the film in the cine-camera moved step by step by electronic or mechanical means and the camera was set to take one picture every ten, twenty or thirty seconds; by projecting again at twenty frames per second the time-scale was compressed. The technique was sometimes referred to as a time telescope, which was an apt description.

The first film which Dr. Michaelis showed was made by the time-lapse technique, using colour film and an interference microscope. It was a silent film and made in connection with research work carried out at University College

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* Michaelis, A. R. 'In the Beginning was the Word . . .' (A comparison between books and films). *University Film Journal*, 1955, No. 7/8.

London on the behaviour of normal cells compared with cancer cells. The portion of the film shown portrayed the behaviour of cancer cells when subject to certain stimuli, and the very slow movement which became visible would be quite unseen by the eye when looking through the microscope; it was visible only because the time-scale had been compressed. The movement was, as the film showed, reminiscent of that of amœba. Such a film would be used by the scientist himself to gain new knowledge, and also for showing to fellow scientists and even, perhaps, at university lectures.

Dealing with the position of research films in this country, and with what should be done to make the utmost use of them, Dr. Michaelis said that the techniques were difficult and there were relatively few people who were qualified to carry them out. Secondly, there was no central institute for such films in this country, as there was in Germany, and there were no facilities in British universities such as existed in American universities. He would strongly recommend that a central institute of scientific cinematography be established in this country, closely following the experience of the German institute, which had been in existence since 1936. There was great need for such an institute, because the relevant techniques often required expensive apparatus. Such an institute would act as a focus for the exchange of information and as a pool of equipment. Scientists could go to it to learn the necessary techniques, and the institute could send members of its staff to universities to help in specific research projects, as was being done in Germany. In America there were visual aid centres at nearly all colleges and universities. Not all the visual aid centres dealt with research films, but they could supply research workers with the necessary cinematographic equipment and the basic 'know-how'. His first recommendation, therefore, was that a central institute of scientific cinematography should be set up in this country.

TEACHING FILM

Turning to the second type of film, the teaching film, he said that the making of teaching films was entirely different from the making of research films. To start with, what had to be portrayed must be carefully written down; a full script was necessary. The treatment must be fully discussed between the film maker, the sponsors of the film, and those who were taking part in it.

As an example of the teaching film, he showed part of a film called *Keep Your Diesel Running*, recently made by the National Coal Board to teach those in charge of underground diesel locomotives the importance of maintenance and the correct methods to use with these very complex machines. To make the film a director had been engaged and many months had been spent in assembling the theoretical material and finding the correct visual interpretation of it. The commentary had to be written and the film edited, so that there were many stages in the preparation of the film, which might well have cost about £2,000 or more. That would be a reasonable figure for such a film, which demanded considerable thought and a great deal of work; but the final result, if it was well done, was an extremely efficient aid to teaching.

Teaching films could be valuable as the background to a lecture where the lecturer was not able in any other way to show the material about which he wished to talk. Five films were being used to illustrate the present talk, and it would be difficult to give it without them. Teachers had sometimes said that the film was likely to replace them rather than be an aid to teaching, but that view was quite wrong and very few people would hold it today.

The Coal Board film was an example of a training film addressed to an audience who could not be efficiently instructed by a training manual or a written description of the work to be done. It had been made 500 yards underground under very difficult lighting conditions, and the cameraman responsible for it was to be congratulated. It was typical of a large number of teaching and training films which were now available. During the last war the British and American forces had developed to an extremely high degree the art of making teaching films, and by the end of the war new training films were being made by the American armed forces at the rate of seven a day. General Keitel, the German Chief of Staff, when interrogated at the end of the war and asked to give his reasons for Germany's defeat, said they had calculated that a certain length of time was needed to bring a German recruit to the stage of efficiency where he could drive a tank or fly an aircraft; they had assumed that the same time would be needed for British and American recruits. That the time had been so much shorter was entirely due to the efficient use of visual aids by the British and American forces.

It was a great pity, therefore, that British industry, as well as the universities and schools of this country, was not making efficient use of teaching films. An admirable organization existed, the Educational Foundation for Visual Aids, which had in recent years made excellent scientific films for use in teaching in schools. If this country was to survive and, in order to do so, have sufficient scientists and technologists in the future, full use must be made of visual aids. The previous Minister of Education had set aside £92 m. for new technical colleges; 1 per cent. of this money, or, say, £1 m., ought to be set aside for making useful teaching and training films. The use of chalk and blackboard was as old-fashioned as the use of the quill and gall ink. Films and models and photographic illustrations were a modern and efficient means of communication from senior scientists to junior students. Full use must be made of them, and he would strongly recommend that 1 per cent. of the sum being set aside for bricks and mortar should be used for films.

POPULAR SCIENTIFIC FILMS

The next type of film was that used for the popularization of science, where the scientist provided material for the man in the street. Early in the history of film making, round about 1910, it had been recognized that nature could provide some of the most interesting examples and beautiful illustrations. Percy Smith had pioneered a great deal of this work in this country about 1910, and after the first world war the series of *Secrets of Nature* films shown widely by Gaumont-British were amongst the most excellent which had ever been made. Mary Fields, now in charge of the Children's Film Foundation, had been, with Percy Smith, responsible for them.

As an example of this type of film Dr. Michaelis showed a colour film called *Nature's Half Acre*, which also made use of the time-lapse technique. The film had some educational value but was primarily intended for entertainment. Walt Disney, who made it, had done a great deal of work in the communication of science to the man in the street through his war-time films, which had been widely used in South America for instruction in hygiene. One difficulty involved in the making of such a film as Dr. Michaelis showed was, of course, that flowers grew where the cine-camera would be exposed to the weather and to changes in the sun's lighting. Plants continued to grow during the night, and it was necessary to record their growth at strict time intervals—say once a minute. It was almost impossible to do this out of doors, so that it was usual to build a special hothouse studio in which artificial illumination alone was used, and that had probably been done in this case. The film showed the growth of flowering plants in spring.

There was no reason why entertainment should not be accompanied by a certain amount of education. The *Secrets of Nature* series to which he had referred had made many young people take up the study of biology and had inspired them at a very early age. That inspiration could be given by the feature film which portrayed the work of eminent scientists such as Ehrlich and Louis Pasteur. The biographical films of those two eminent scientists had been entertainment films, but they must have made a deep impression on young people.

The time had come for more entertainment films to be based on scientific subjects. The cost of making such films was great, but the cinema had reached a stage where it could well do something to repay its debt to science. Without scientific research—very detailed and lengthy research in chemistry and in optics, in electronics and electrical engineering—the cinema would not have reached its present state of perfection. The time had come for it to repay its debt to science by making films which showed science in its best aspects, by making biographical films of eminent scientists and showing the scientist not, as was still being done, as a long-haired, esoteric, spectacle-wearing person but as a perfectly ordinary human being, with the same troubles and joys as everybody else. That was a recommendation to the cinema industry which should certainly be followed up in the near future. We had the talent and we had the stories in this country. It would not be very different from a film such as the story of Terylene, the production of a new synthetic fibre in this country by I.C.I. The film makers had used some poetic licence in dealing with their subject, as they should, but the film showed certain aspects of science in a very creditable way.

BIOGRAPHICAL FILMS

He had discussed the three levels of communication: the research film (scientist to scientist), the teaching film (senior to junior), and the popular entertainment film (scientist to man in the street). He proposed now to show a film of the past, and then go into the future. The past was extremely suitable for film, which could very well preserve the characteristics of eminent scientists. As an example, he showed a short biographical film of Lord Rutherford. There were, so far as he knew, not more than five films of this nature available in this country. The film itself was a thoroughly bad one, merely showing Lord Rutherford reading a manuscript, and one would get just as much out of a written copy of his talk with three photographs, one from the front and one from each side, as one got from this film. That did not mean, of course, that far better films could not be made, showing something of the characteristics and personality of the scientist. Biographical films of this type should be carefully thought out, and Dr. Michaelis strongly recommended that the scientist portrayed should be asked to repeat in front of the camera those crucial experiments which had brought him fame. If the money to make such films were available and the films were made, worthwhile biographical records would be passed on to futurity. To begin with, Nobel Prize winners might be chosen, and with each Nobel Prize a twenty-minute film should be made of the scientist concerned, showing the type of research work which he had done which had led to the award of the prize.

We were living at the very beginning of a new method of communication. Any books printed before 1500 were incunabula, and any film made before 1900 was in the same category. The films made today would be invaluable records in years to come. If it had been possible for a film to be made of Newton, it would be one of the greatest possessions in our national archives.

Unfortunately the whole situation so far as film archives were concerned was extremely poor compared with book archives. Anyone anywhere in the world today could with little expense and trouble read any work which had ever been printed. The world-wide microfilm service had made research and compilation extremely easy anywhere in the world. If, however, one wanted to see a film, even if it were only ten years old, there was very little chance of doing so unless a copy was preserved in one of the three great film libraries: the National Film Archives in this country, the Cinémathèque française in Paris and the Museum of Modern Art in New York. If the films had been made in other countries the difficulties of obtaining copies for private study were very great. Librarians should realize the value of the film for the communication of science and should see that the film took its natural place alongside the book on their shelves. That was quite possible today, now that the use of cellulose acetate had become common. Until 1950 35-mm. film had been made on cellulose nitrate, which was unstable and liable to disintegrate after a number of years.

If librarians could not establish film archives in their own libraries they should get in touch with the National Film Archives of the British Film Institute, who would be prepared to consider for preservation copies of valuable films. Tribute should be paid to the National Film Archives in this country, the only ones in the world to set up special archives for the preservation of scientific films.

SCIENCE-FICTION FILMS

The last film which Dr. Michaelis showed dealt with the future. It was in the well-known field of science fiction. Science fiction as a type of literature was by no means of recent origin, and the names of Jules Verne, H. G. Wells and others would come to mind. Even the science-fiction film was not new, and as long ago as 1902 a film had been made called *A Voyage to the Moon*. The writer of science fiction had to call on the imagination of his readers when he described the voyage of a space-ship to the moon, but the film maker was very much more fortunate, because through the tricks of the cine-camera and the optical printer he could produce anything he liked. Models could be photographed in such a way that they appeared to be real objects of full size; action could be slowed down or speeded up, and so on.

Science came into this from a very important point of view. Most scientists would agree that from the first unmanned satellite which was about to be launched there would follow in due course a manned artificial satellite. Possibly at a later stage an unmanned, and later even a manned, trip to the moon might be attempted. This type of scientific work cost, of course, an enormous amount of money, and such funds could come only from government sources. If government sources were to finance such projects, informed public opinion must be behind them.

The film called *Destination Moon*, of which he showed an extract, was one of the few science-fiction films the script of which had been written almost entirely by scientists. The position was not unlike that which existed in 1939 with regard to atomic energy; it was thought today that most of the fundamental theory of space flight was known, but not nearly enough about the technology. The film was based on present-day theory and showed how it was imagined that flight to the moon might take place. In the extract shown, a member of the crew, through an incautious movement, had drifted away from the surface of the space-ship and was rescued by making use of the 'action equals reaction' principle through the discharge of gas from a cylinder.

Science-fiction films had been made extensively, but very few of them came up to the scientific accuracy of *Destination Moon*. In this country only one really good one had been made—*Things to Come*, based on H. G. Wells's story. If properly made and based on existing knowledge such films should be useful and profitable.

CONCLUSION

Summing up, he said the first recommendation was that research films could be used more efficiently if a central institute was available. Secondly, teaching films could quickly help to overcome the shortage of scientists if £1 m. were made available for them. Thirdly, popular science films or entertainment films should be made about the role of the scientist in the community today. Fourthly, archives should be strengthened and biographical films made of eminent scientists. Finally, if science-fiction films were properly made they could communicate certain scientific ideas.

The film could be used for the communication of scientific ideas, but success would depend to a very great extent on whether it was used correctly and on whether the means were made available for such use. In 1937 a sealed container filled with everyday things had been buried under the New York World Exhibition, with the instruction that it should be raised 5,000 years later. It had in it a film and instructions for making a projector. When the container was opened would the film be an invaluable incunabula of the motion picture or merely a forgotten curiosity? That depended very much on whether or not we used the film correctly in the next fifty years.

PUBLIC LIBRARY SERVICES IN THE COVENTRY AREA *

BY E. SIMPSON, F.L.A.

City Librarian of Coventry

Coventry, 6th December 1956

THE purposes of public libraries and those of technical and research libraries differ so widely in scope that I would like, first of all, to deal with the background against which the public library operates. Whilst the field covered by the public library is so wide as to be almost without boundaries, that of the special or research library is usually fairly tightly circumscribed. Public libraries are, as you know, wholly rate supported—or at least almost wholly, because we do draw a certain amount of income from the charges we levy on the people who keep books overdue—and unlike some other corporation departments we do not receive any Government grant.

In its library services Coventry is, I think, fairly typical of any medium-sized city. Our revenue from the rate is about £74,000 a year and our income from the charges I have mentioned is approximately £6,000. We spend about £16,000 on books and last year we issued from our service points 2,300,000 books. Our total book stock is approximately 230,000 volumes. In addition to the Central Lending and Reference Libraries we have eight branch libraries and nine evening centres. We also circulate 38,000 books to 110 schools in the city and operate a gramophone records library. We provide, too, services to adult classes, a collection of 12,000 illustrations, and a special library, of which we are very proud, which is devoted to local history and topography. The information required by industry is not always of a technical nature and, as with the public generally, a great fund of general information is often required in the works. For instance, a brochure which is shortly to be issued jointly by the Corporation and the Chamber of Commerce, with the aim of attracting to Coventry executive and research workers and technicians, actually has its origin in material drawn from this local collection, which contains not only books on the history of Coventry but also a large collection of prints, photographs, maps of various sorts, pamphlets, local newspapers and news cuttings. It also contains some very scarce material on the history of Coventry's industries which, although at the present centred on the motor industry, has in the past been surprisingly varied.

The public library, therefore, has many calls upon it and is freely available to all members of the community, from the day they can first distinguish print until life's journey terminates. We have to provide for the youngest as well as the oldest; for the literate and the partly literate; for the master at the grammar school working on a thesis for an advanced degree and for the housewife. There are almost no limits to the demands made on the service.

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*Talk given at a joint meeting of the Aslib Midlands Branch and the Coventry Information Group.

The provision of technical literature for use by industry is therefore only one of those many activities which result in the public library service being weak in certain directions. This, of course, is partly because some authorities do not have the resources to provide expensive technical works which may only occasionally be required by technicians. Arising from the derating of industry, there is, too, some reluctance on the part of local authorities to provide books of a specialized nature mainly intended for the use of industry, the general argument being that, since firms do not contribute their fair share towards the local authority's revenue, they cannot expect to have all their requirements met by it. On the other hand, many local authorities take a much wider view, knowing that local industry is an integral part of the town and is dependent upon it for its prosperity, and some have gone to considerable lengths to provide first-rate technical libraries and services to industry.

In Coventry there has never been any opposition, and indeed we have gone out of our way to help industry as much as we can. The brochure which we issued last year in conjunction with the local Productivity Committee is evidence of this.

Unfortunately in Coventry we are not in the position of the majority of public library services, because we were heavily blitzed and the major part of our central library was destroyed, and since then its departments have remained dispersed. Our Reference and Technical Library has to operate in the most inadequate space and generally we are extremely cramped so far as accommodation goes. Nevertheless, within the limits imposed upon us we have attempted to do all that we can and to prove that although our buildings may be inferior the service we provide is as good as any.

In the technical field, although the demand is wide, we have to specialize in those subjects likely to be of most interest locally. The book stock of our Technical Library is therefore most extensive in the fields of automobile and aero engineering and their allied trades, in the same way that in Sheffield, for instance, there is specialization in the literature of the metallurgical industries. Generally, in the fields in which we specialize, no book is too expensive for us to buy provided that we can, among other things, see a use and a demand for it, inside or outside the library premises, and that it does not merely duplicate information already available.

Our stock consists of some thousands of carefully selected technical and scientific books, ranging from *Machinery Yellow Books* to the volumes of proceedings of the Conference on the Peaceful Uses of Atomic Energy held on an international scale at Geneva. Not many of us work to build an atomic reactor, but many are concerned with inspection procedures utilizing atomic radiations, and such information is readily available from these volumes together with a mass of other information on the industrial uses of atomic energy. Apart from such futuristic knowledge, we can produce a mass of facts on such everyday questions as: 'What is the constitution of a given alloy in British Standard Specifications?' 'How do you estimate machining times?' 'What procedures are necessary for the machining of tungsten rods?' 'What is the tensile strength of steel?' and many other such facts which the designer and the 'man on the shop floor' may need to know from time to time.

Apart from books, which must always be somewhat out of date, there are our periodical files. We take over four hundred trade and technical periodicals, and file many of them for periods of up to ten years. Some of these periodicals are of interest to the pure scientist only, but most are essentially practical journals with a down-to-earth approach to their subject. The key to them and to their information is provided by the rather expensive but invaluable *Engineering Index* and *Industrial Arts Index*, both American compilations which we have going back to 1940. Almost any article on any technical or scientific subject which has appeared in a periodical either here or in America and many foreign countries can be traced through one or other of these indexes, and such publications as the *World list of scientific periodicals* and the new *British union-catalogue of periodicals* will tell us where files of the periodical can be obtained, if we do not have them ourselves.

This brings me to the subject of interlibrary co-operation. Besides our own resources we have access through the Coventry Information Group to the files held by the works and industrial libraries in the city. Thanks to the co-operation of these libraries, such as those of Messrs. Courtaulds and Armstrong Siddeley, we have almost immediate access to over nine hundred titles of commercial, scientific and technical magazines held in various special libraries in the city. A union list of these holdings is maintained in the Technical Department of the Reference Library, and this has proved of immense value in quickly getting information to some of our inquirers. Apart from co-operation with local industry the libraries are linked through the West Midlands Library Bureau with all the other libraries in the Midlands industrial area, and through the National Central Library with the great national libraries such as the Science Museum Library, and the libraries of such organizations as the Motor Industry Research Association and the other Research Associations approved by the Department of Scientific and Industrial Research. Apart from these purely library channels we can call on the help of the Association of Special Libraries and Information Bureaux, which has very many sources and contacts in industry, and whose Midland Branch is responsible for arranging this meeting. If all else fails, and no item of particular importance can be found in this country, both the National Central Library and Aslib can arrange loans from foreign countries. I can claim, therefore, that if you want to know something, and that something is the sort of knowledge that can be obtained from a book or from a periodical article, there is an extremely good chance that we will be able to get it for you from somewhere. Of course, it may sometimes take longer than we should like, if it is an item not too easy to obtain.

Perhaps I can give you a few illustrations of the sort of inquiry we can deal with:

The library of a firm concerned with diesel engines wanted some data on the 'relation between diesel exhaust gas composition and the engine air-fuel ratio'. The *Engineering Index* was consulted, and gave two articles, among others, that seemed relevant. One was to the Society of Automotive Engineers *Journal* for 1936, and the other was for a preprint of a paper given to the Society of Automotive Engineers for 1949. We were able to borrow both these from one of the research associations, and both gave the information required.

Someone else wanted a history of wood screws for an article he was writing. The *Transactions* of the society which concerns itself with the history of engineering, the Newcomen Society, to which we subscribe, were checked, and the required history was found in an article published in the 1941 volume.

Another inquirer had found a reference to a German periodical article. His reference was to *Archiv der electrischen Übertragung*, vol. 4, page 267. We were able to borrow this from Germany through the National Central Library. Fortunately the reader could translate the German for himself.

There is a device apparently called the aero-thermopressor, for improving the efficiency of aircraft gas turbines, and one of our borrowers wanted to know about it. The article turned out to be in the *Transactions* of the American Society for Mechanical Engineers for April, 1956. We take the bound volume of these transactions, the last one being for 1955, so had to borrow this April, 1956, issue. We got it from one of the libraries of Imperial Chemical Industries.

Apart from this sort of technical query there are many others where technicalities impinge on human relations and such matters as state and local planning, and on economics.

We have many books on labour relations, management problems, and reports on such topics issued by bodies like the British Institute of Management. We also take the relevant periodicals such as *The Manager* and *Industrial Welfare*. Other bodies also issue reports concerned with the same problem of increasing the productivity (and earnings) of industrial workers. I need only cite the reports of the British Productivity Council as an example of the sort of material I have in mind.

It has been said there are liars, damned liars and statistics. The only way we can think of to remove this danger inherent in statistics is to provide as many as possible, and let the best ones win. We have the *Monthly Digest of Statistics*, which provides monthly figures relating to such items as the cost of living (now called more respectably the Index of Retail Prices), trade, both internal and foreign, population figures, and even such depressing things as rainfall, temperature and sunshine figures for the country as a whole. The same sort of information is cumulated and expanded into a yearly volume, the *Annual Abstract of Statistics*. Figures for trade are given in the monthly Trade and Navigation accounts of the United Kingdom, and in expanded and detailed form in the five annual volumes of *The Annual Statement of Trade*. These statistics are all published by the Stationery Office, from which source we also get all the Bills and Acts of Parliament; the Statutory Instruments which, amongst other things, tell us how high and how big our car rear lamps must be; reports of debates in the House of Commons and the House of Lords; the reports of the nationalized industries which supply our gas, electricity and transport; Royal Commission reports, Monopolies Commission reports, and a mass of other papers which are often a headache to deal with but do contain a vast amount of useful information much of which does not appear anywhere else.

Books and other printed materials are the basic content of any library, but it is the staff exploiting them that creates the service. We have a staff trained and experienced in the grouping of books and material, well acquainted with their contents and able to find any item quickly; a staff that knows what we have, where it is and how to use it when found.

THE BRITISH INSTITUTE OF RECORDED SOUND

BY JAMES J. EATON

Aslib Representative

FOR reasons of which the Director of Aslib has been made aware a considerable time has passed since I, as representative of Aslib on the Council of the British Institute of Recorded Sound, made my previous report regarding the affairs of the Institute. The outstanding reason for the delay has been the fact that any reports which might have been presented during the intervening period could only have given a misleading impression. The efforts made firmly to establish the Institute were unremitting but, as is usual with a new idea, lack of money frustrated those efforts and no sooner was one obstacle overcome than others appeared.

The present time, however, seems appropriate to record that the various protracted efforts which have been made are beginning to show definite results.

Before going into details concerning the Institute's progress it is desirable to bring up to date the list of its present Vice-Presidents, Officers, Members of the Council and the Executive Committee, which will thus indicate changes in, or additions to, the personnel since my previous report was submitted.

Viscount Esher, who has been President of the Institute since its inception, remains in office. Here is the full list of the Council:

President: VISCOUNT ESHER

Vice-Presidents

DAME MYRA HESS
ERIC BLOM
SIR ADRIAN BOULT
RT. HON. SIR ALEXANDER CADOGAN
JOHN CONNELL
THE EARL OF HAREWOOD
FRANK HOWES
SIR EDWARD DE STEIN
SIR COMPTON MACKENZIE

Honorary Treasurer: SIR ROBERT MAYER

Assessor appointed by the Arts Council of Great Britain:
M. J. MCROBERT

Assessor appointed by the Ministry of Education:
J. HORTON

Nominated by	*Member*
Aslib	*J. J. EATON
Association of Education Committees	B. S. BRAITHWAITE
Association of Education Officers	*J. COMPTON
B.B.C.	*R. V. A. GEORGE
British Association	DR. GEORGE TAYLOR

Nominated by	*Member*
British Council	*Mrs. E. M. Denison
British Museum	‡A. Hyatt King
Cambridge University	Thurston Dart
Edinburgh University	David Abercrombie
English Association	Miss K. I. Bradley
English Folk Dance and Song Society	Douglas Kennedy
Institute of Historical Research (University of London)	Taylor Milne
Library Association	J. H. Davies
National Institute of Adult Education	†E. M. Hutchinson
National Library of Wales	Sir Ifan ab Owen Edwards
Physical Society	Dr. A. B. Wood
Public Record Office	*J. H. Collingridge
Royal Academy of Music	*Sir Reginald Thatcher
Royal Anthropological Institute	William B. Fagg
Royal College of Music	Sir Ernest Bullock
Royal Empire Society	Colonel Archer Cust
Royal Society	Professor L. F. Bates
School of Oriental and African Studies (University of London)	*Miss E. J. A. Henderson
Science Museum	*Dr. D. H. Follett
St. Andrews University	Professor R. C. Johnston
Worshipful Company of Musicians	Brigadier H. A. F. Crewdson

Co-opted Members

*Professor Gerald Abraham
*T. E. Bean
*Gerald Coke
*Dr. Dennis Fry
*Sir Denis Rickett
*Desmond Shawe-Taylor
*The Hon. James Smith
*Michael Rubinstein (*Honorary Solicitor*)

Secretary: Patrick Saul

* Member of Executive Committee.
† Vice-Chairman of Executive Committee.
‡ Chairman of Executive Committee.

Since September, 1952, the Executive Committee has met fourteen times. The Institute is now installed in premises of its own in a central position at 38 Russell Square, W.C.1, adjoining the British Museum and the Senate House of London University; it would, in fact, be difficult to find a more suitable position in London for an organization of the kind. The premises have been converted and partly equipped by means of funds generously provided by the Charles Henry Foyle Trust of Birmingham: they include a lecture room (seating up to 120) equipped with a grand piano and a record-playing apparatus specially designed to give the best reproduction possible from the oldest as well as the newest type of records. In this room a number of lectures and recitals, illustrated by records, given by such distinguished speakers as Alan Pryce-Jones, Astra Desmond, Joseph Hislop, Neville Cardus, etc., have been held; these have been organized in conjunction with London University. In addition to storage space which can accommodate between 100,000 and 150,000 records, two soundproof listening cubicles have been constructed, as it is the aim of the Institute not to be merely a static archive but to make its records accessible for study.

Running expenses have been met by grants secured from the Arts Council and the L.C.C., and from subscriptions received from members of the public enrolled as 'Friends of the Institute'. Recently the Pilgrim Trust has made a grant to meet estimated deficits on running expenses for three years as well as a capital sum for additional equipment.

An appeal for gifts of records was launched in the Press in October, 1955, with the result that the total number of records now held by or promised to the Institute exceeds 25,000. This number includes some 5,000 kindly transferred by the Central Music Library and one or two other collections—notably 600 records of Czechoslovak music presented to the Institute by the Czechoslovak Government—and some thousands of records belonging to two public libraries. The number of records mentioned above may seem very large, but it should be pointed out that it is, in fact, no more than a small fraction of the total which the Institute must acquire if it is to achieve its aim of becoming a fully comprehensive national collection. For this reason the Secretary will be grateful for any offers of records of all kinds.

The Institute maintains a circulating library kept entirely separate from its permanent archive and known as the Central Gramophone Library—it was formerly the Arts Council Gramophone Library—which is available to hospitals, prisons and music societies, also to lecturers in adult education.

The Institute has recently begun to circulate to the 'Friends of the Institute' a quarterly *Bulletin* planned to contain articles concerned with record archives, record librarianship and information regarding functions arranged by the Institute, as well as detailed descriptions of various kinds of recorded material, musical and otherwise. From time to time it is hoped to publish 'discographies', i.e. record bibliographies.

It will thus be seen that, although there is a vast field of effort yet to be explored, the Institute has now made a real beginning towards becoming the indispensable national archive in the field of recorded sound. Aslib, which gave its help in the preliminary steps towards founding this enterprise, can regard the progress so far made with satisfaction, and will no doubt lose no opportunity within its power to assist the Institute in the further stages of its growth.

CICRIS

CO-OPERATIVE, INDUSTRIAL AND COMMERCIAL REFERENCE AND INFORMATION SERVICE*

BY R. D. RATES, F.L.A.
Borough Librarian, Lewisham Public Libraries

THE immense strides made by technical research and therefore in technical education during the past thirty years have been readily appreciated. What is less obvious is that west London—an area which for this purpose lies between Staines and Kensington—has developed with remarkable rapidity during that period too. A quarter of Britain's light industry is now concentrated in that region, and in it are located no less than 3,800 firms of various sizes.

CICRIS, known during more recent years as the Commercial and Technical Library Service, West London, was set into operation in 1951. Its main object was 'to provide a convenient source of information for every firm that needs it'. Some sixty-four of the larger firms are actively participating—that is, providing as well as receiving—in the scheme. But it is the ten public library systems in the area which give CICRIS its natural supply base. Their branch libraries provide service points which are accessible to most firms. Each of these public library systems, moreover, specializes in certain technologies. (Thus, Acton specializes in electronics, dyeing and cleaning, laundries, paper technology, printing, radio and TV.) In addition five public libraries maintain union lists of certain basic types of material: abstracts and indexes at Hammersmith; commercial newspapers at Southall; technical and translating dictionaries at Ealing; technical and commercial periodicals at Acton; trade directories and year-books at Middlesex County Central Reference Library.

The list of 2,100 scientific and technical periodicals available to anyone within the area, but without locations, has just been published, and it is expected that similar publications will shortly cover the other lists.

The handling of inquiries and requests for loans in connection with CICRIS involves the public libraries of west London in the answering of some 22,000 telephone calls a year. CICRIS is a movement as well as an institution, and small firms without libraries have learnt the need to start up libraries of their own. Technical college libraries are still in their infancy, on the whole, but in turning from public libraries to these technical libraries as the future providers of scientific and technical information to industry Dr. Urquhart had certainly put public libraries on their mettle. So far as CICRIS was concerned, the result had been to bring the public and technical college libraries closer together. Indeed, the Regional Advisory Council for Higher Technological Education are in fact quoting CICRIS as an example of a service to follow.

Mr. Rates pointed out there were several schemes similar to CICRIS, particularly in large cities such as Sheffield, Leeds, Manchester, Liverpool; nearer London, there was the Herts County Scheme. In south-east London a scheme was getting under way, based on Woolwich Public Libraries.

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* Summary of a talk given to the Aslib Economics Group on 10th October, 1956.

A number of queries were raised at the end of Mr. Rates' most interesting and informal talk. How much did the CICRIS scheme cost? Costs were defrayed by the users and providers (e.g. postage, stationery). Were special staff qualifications necessary in the public libraries concerned? No. The librarian's job was to know where to find information and this came with practice. There were, of course, limits, for the public librarian did not handle laboratory reports and confidential information relating to firms. Could CICRIS be applied to Central London? Here the concentration was largely commercial and much good work in the exchange of information and loans was already being done. What were the relations of CICRIS with Aslib? Cordial; in fact CICRIS made a point of being in contact with all likely sources of information, succeeding here where a direct approach by the inquirer had failed to produce results.

Letters to the Editor

DEAR MADAM,

I have just read the November issue of *Aslib Proceedings* containing the papers presented at last year's Aslib Conference. The attempt to cost information work was a pleasant new departure.

I am, however, mainly moved to write to you by some of Mr. Smith's remarks, particularly as I have, in the past, made somewhat similar criticisms of Aslib's concentration on documentation. I should like to remedy what I feel may have been destructive criticism on my part by suggesting some other subjects to which Aslib might give more attention.

I broadly agree with Mr. Smith's complaint that Aslib concerns itself only with the activities of junior staff. I think, however, that the worst trouble is not that Aslib ignores all except technical information but that it neglects so many of the activities of senior information officers, whatever their field and subject matter.

I must admit it would be a delight to me to attend an Aslib conference at which the mechanics of library work were not mentioned. I should like among other things to listen to an expert (from the Science Museum, say) talk about conveying technical information by visual displays such as models, diagrams and pictures. This might be followed by an expert speaking on technical writing to suit the requirements of the reader. For example, how does one brief the managing director, the research director and an apprentice learner with the same technical facts? With examples, this could be very useful as well as good fun.

As many information officers have publishing to do, a talk from a consultant typographer on good and bad layout, and another perhaps by an advertising man on the use of colour in publications and display material would be helpful. A talk from a technical editor on what the Press wants from research workers and how the information department can mitigate the shortcomings of scientists in supplying it should stimulate quite a lot of discussion. A reporter on 'The technique of holding a press conference' could be a pleasant change.

Indeed conferences, particularly technical conferences, are a most important means of disseminating technical information, and are certainly of interest to Aslib members who often have to organize them. The 'do's' and 'don'ts' of such functions would form a useful subject of discussion. Conferences should be an important recurring subject for Aslib. On the more detailed level one could discuss the advantages and disadvantages of different methods of recording—shorthand writer, stenotyper, tape recorder, or just someone making notes—or whether it is best to circulate papers before the meeting or summaries of them or nothing, and so on. A related subject about which Aslib might be able to educate people is the size of lettering and figures on lantern slides.

There are many other subjects on the fringe of information work which could have occasional papers devoted to them. Direct advertising (as opposed to indirect advertising, which many information officers have to do discreetly) is one. I feel, however, that information officers could learn much of value for their exhibition and display work from the best advertising agencies.

Technical liaison is another activity which sometimes is, and sometimes is not, a function of the information department. It should therefore appear sometimes in Aslib discussions. An analysis of the types of technical help needed by firms visited, and compared with written technical inquiries received, would indicate the sort of information that is lacking in the industry served, and might be a subject for one of the groups.

I could extend this list but have probably said more than enough. I hope, however, that some of these suggestions may serve as starting points for further ideas. I present them as subjects that would interest me, and they are all ones with which I and other information officers are directly concerned. I believe Aslib could help people to avoid many mistakes by stimulating discussion where there is difference of opinion, and by building up recognized standards. There seems to be more need and scope for an organization which can advise on these aspects of information work than on documentation, where the Library Association meets part, at least, of the need.

Yours faithfully,

I. M. SLADE,

Information Officer, The British Iron & Steel Research Association.

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All the above items may be borrowed from Aslib Library, except for those marked with an asterisk. These are mostly available for consultation in the Library, apart from a few for which locations in other libraries can be given by the Librarian.

NEW ELECTED MEMBERS

Corporate

Beckenham Public Libraries	J. L. Wilson
Consumers' Research Association	P. Barbour
Elga Products, Ltd.	Mrs. Joan Carew
Flintshire Technical College	Mrs. Audrey Jenkins
Hereford City Library	J. F. W. Sherwood
Kemp, J. A., & Co.	H. F. Kelly
Masius & Fergusson, Ltd.	Miss E. Wiessberger
Neath Public Library	Miss S. A. Parfitt
Nottingham University, School of Agriculture	Miss N. W. Rhodes
Shropshire County Library	Miss O. S. Newman
Sommerfelds, Ltd.	K. J. Sommerfeld
South Shields Marine & Technical College	J. Hargreaves
Southall Technical College	Mrs. M. Jordan
United Kingdom Atomic Energy Authority, Industrial Group	—
Upper Norwood Public Library	L. H. Cudby

Individual

Barrett, Mrs. Marie
Collins, Percy
Pariser, Franz
Reed, John Brent
Visser, Miss T. E.
Whitaker, Wilfred H.

ASLIB INFORMATION

Aslib Calendar

FRIDAY 29TH MARCH. Winter Meeting, see paragraph below.

FRIDAY 5TH–SUNDAY 7TH APRIL. Annual Conference of the Aeronautical Group, at the Royal College of Aeronautics, Cranfield, Bucks.

MONDAY 8TH–FRIDAY 12TH APRIL. Introductory course to information work, at Aslib, 4 Palace Gate, London, W.8.

THURSDAY 25TH APRIL. Winter Meeting, see paragraph below.

MONDAY 20TH–WEDNESDAY 22ND MAY. Aslib Annual Conference, at the Grand Hotel, Scarborough.

Aslib Winter Meetings

The next meeting will be held at 6 p.m. on Friday 29th March, at the Royal Society of Arts, John Adam Street, Strand, London, W.C.2. Tea will be served at 5.30 p.m.

Mr. H. C. Richardson, A.L.A. Librarian, The Institution of Civil Engineers, will speak on the reclassification of his library. He will describe how the many problems involved have been overcome, including recataloguing, the survey and re-arrangement of the stock of books and periodicals and the purchase of library furniture. He will also explain the additional facilities now provided by the library. The Chairman will be Mr. Frank H. Smith, Librarian, Royal Aeronautical Society.

On Thursday 25th April Mr. W. R. Robertson, Public Relations Officer, London Transport, will speak on the public relations work of London Transport. He will deal with the subject as a function of management, and explain public relations technique, the groups of people involved, and the organization of departments. He will also describe the records system used.

Northern Branch

At the Northern Branch Annual General Meeting on 25th January, Mr. A. H. Raine of Brotherton & Company Limited resigned the chair after three years. Mr. A. R. Cameron of A. V. Roe & Co., Ltd. was elected in his place.

The retiring chairman recalled that he had served on the committee continuously since the branch was founded. He described the growth of Aslib and its Northern Branch from the time when the Association had a small membership and an overdraft at the bank to the present day when there are invested funds.

Other officials elected were: Vice Chairman, Mr. V. D. Freedland, British Hat & Allied Feltmakers Research Association; Hon. Treasurer, Mr. D. Newby, Hardman & Holden Ltd; Hon. Secretary, Miss E. Boddy, Edgar Allen & Co. Ltd.

The meeting thanked all those who had worked for the Branch, as well as Mr. D. I. Colley, City Librarian, and the Manchester Libraries Committee for providing facilities for meetings.

Scottish Branch

About half the members of the Scottish Branch attended the Annual General Meeting in Glasgow on 8th February. After the business meeting, at which all officials were re-elected and the accounts found to be in a satisfactory state, members discussed with Dr. D. J. Urquhart of D.S.I.R. plans for the new National Lending Library for Science and Technology.

A discussion of Aslib's proposal to form a register of information officers was led by Dr. D. G. Brown, I.C.I. Nobel Division, with Mr. W. B. Paton, County Librarian of Lanark, opposing. The Director gave a brief outline of the proposed scheme. It was evident that the members were not wholly in favour of the proposals.

After an excellent lunch, Mr. J. Bird, Aslib Librarian, described the facilities available to librarians and information officers at Aslib, including books about their own profession that are often ignored. He displayed some periodicals about libraries and library methods, some of which were new to members.

International Conference on Scientific Information

Plans are going forward for the International Conference on Scientific Information to be held in Washington in 1958. The meeting will be held under the general sponsorship of the American Documentation Institute, the National Science Foundation and the National Academy of Sciences, in collaboration with Unesco and the International Federation for Documentation.

Papers will be refereed before acceptance, and those accepted will be reproduced and distributed at least two months before the conference. They will not be read at the meetings but only introduced for discussion. Members who intend to submit papers or to attend the conference are asked to inform the Director, Aslib, 4 Palace Gate, London, W.8, if they have not already done so.

Atomic Energy Information

A meeting will be held at 2 p.m. on Wednesday 3rd April, in London, on the availability of atomic energy information and examing the library problems connected with it. The accommodation is limited. Special notices and application forms for attendance were sent to members last month.

Mr. B. Fullman

Members will be pleased to know that Mr. B. Fullman, B.SC., F.R.I.C., F.I.M., Chief Information Officer, British Non-ferrous Metals Research Association was listed as M.B.E. in the New Year honours. Mr. Fullman has been a member of Aslib since 1937. We offer him our congratulations.

Mr. W. E. Clason

Mr. W. E. Clason, a long-standing member of Aslib, has recently completed forty years' service with N. V. Philips at Eindhoven, Netherlands. He has been in charge of their centre for library documentation and translation since it was first opened in 1952. Before that Mr. Clason was employed on the collection and classification of patent documents and, after the war when the N. V. Philips library was burnt down, he started the new collection of over two million documents. Mr. Clason has travelled widely in Europe and visited America in the course of his work and is an active supporter of the Fédération Internationale de Documentation and Secretary of the Netherlands Classification Committee.

Association of British Theological and Philosophical Libraries

At a meeting held in October 1956 in the Senate House of London University, an Association of British Theological and Philosophical Libraries was formally constituted. Its aim is to bring together libraries in this country that have collections in the field of philosophy and religion and to foster co-operative projects between them, and to represent Britain in the International Association of Theological Libraries. The first issue of the new Association's *Bulletin* appeared in November 1956. The *Bulletin* is to contain news of events of interest to members, and notes on bibliographical and library resources. It will appear irregularly. All enquiries concerning the Association should be addressed to the Hon. Secretary, Miss J. Ferrier, c/o Church Missionary Society Library, 6 Salisbury Square, London, E.C.4.

National Lending Library for Science and Technology

The D.S.I.R., which is charged with planning a new national lending library, intends to issue an appeal for sets of suitable periodicals and other material, probably within the next two months. Members who intend to dispose of such material are asked to retain it where possible until the appeal has been launched. The Department expects soon to have accommodation in which material can be stored until the library itself is ready.

Members who have notified the British National Book Centre of their surplus material need not also notify D.S.I.R. as the B.N.B.C. lists will be scanned by the Department for suitable material.

Aslib Year Book 1957-1958

The second *Aslib Year Book* is now being planned for publication in July.

In order to ensure that entries in the membership list are accurate, special forms are being sent out to members. Those whose names appeared in the 1956–1957 *Year Book* will receive mounted cuttings of the entries. They are asked to confirm that these are correct, or to amend them as necessary. New members are asked to fill in the blank forms supplied. All entries should be returned immediately to Aslib.

Register of Research in the Social Sciences

Number 13 of the *Register* was published last month. It provides an easily consulted guide to research work in the social sciences carried out in the United Kingdom and Eire during the period 1956–1957. It is distributed by Aslib for the National Institute of Economic and Social Research, price 30*s*. Back numbers from 5 to 12, covering the years 1947–1955 are also available.

Increase in Price of Government Publications

In 1953 the prices of Government publications issued before 1926 at 10*s*. or less was doubled, and 10*s*. was added to the prices of others. These increases have now been extended to include all publications issued before 1940.

British Museum General Catalogue

The British Museum has announced revised plans for the publication of its *General catalogue of printed books*. The second edition which was begun in 1930 was proceeding so slowly that its completion in the foreseeable future was unlikely. It has therefore been decided to use photo-offset lithography for reproduction from the existing catalogues in the Reading Room. In this way it is hoped to produce the whole catalogue in the space of six years, beginning at the place now reached by the second edition. The material already covered by the second edition will be reproduced last. Specimen pages of entries produced by the new process are available. The standard of legibility is very high and makes the pages most attractive. It is hoped that once the publication gets under way the production will be at the rate of about 50 volumes a year. The annual subscriptions will depend on the number of subscribers but should not exceed £400 excluding packing and carriage. Enquiries and subscriptions are invited and should be addressed to The Principal Keeper of Printed Books, British Museum, London, W.C.1.

New Journal on Industrial Libraries

The first issue of a new monthly journal, *Industrial librarian and technical book world*, appeared in January. It is to contain articles on technical library problems, short descriptions of various industrial libraries contributed by their librarians, and reviews of new technical books. The journal is published by Industrial & Technical Library Services, 83 Queens Drive, London, N.4 at an annual subscription of 25*s.* 6*d.*

F.I.D. Publications

The International Federation for Documentation publishes a quarterly periodical, *Review of Documentation,* which contains articles and a bibliography on documentation and library science, and *Informations FID*, a monthly news bulletin and free supplement to the *Review*. At the end of each year a cumulative bibliography is also issued.

The subscription rates for 1957, quoted in Dutch guilders and including postage, are:

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Review of Documentation, Informations FID and cumulative bibliography	21
Informations FID	5

Orders should be sent to the Federation Internationale de Documentation, 6 Willem Witsenplein, The Hague, Netherlands.

Survey of Educational Travel

The fourth edition of the *Survey of Educational Travel* has now been published. It includes information about visits and exchanges for students, professional workers, youth groups and schools, outlines the scheme for linking colleges and schools and the opportunities for attending vacation courses and international meetings.

The survey is obtainable, price 3*s.*, from The Central Bureau for Educational Visits and Exchanges, 55A Duke Street, Grosvenor Square, London, W.1.

Furniture Library Group

The Furniture Library Group has arranged its first public lecture to take place at 3 p.m. on Monday 15th April in the Lecture Hall of the Central School of Arts and Crafts, Southampton Row, W.C.1. Miss Denise Bonnett, LL.B., editor of *Furniture Record* will speak about the use of library facilities by a technical journalist.

Scottish Library Association, Summer School

The Scottish Summer School of Librarianship will be held this year from 29th June to 5th July at Newbattle Abbey. The course is designed to assist students preparing for the examinations of the Library Association, and as a refresher for more experienced librarians. The programme will cover such subjects as library administration and finance, standards of public library service and the duties of a chief librarian, bibliography and literary criticism, library publicity, and the history of the county library. There will be visits to the Scottish Central Library, the National Library of Scotland and the Edinburgh Public Libraries.

The total cost of the course, including board and residence, is £6 10*s.* Daily charges are 17*s.* 6*d.* for board and 5*s.* for each lecture. Further details may be obtained from Mr. J. W. Cockburn, F.L.A., Central Public Library, George IV Bridge, Edinburgh 1.

Members' Advertisements

Chemist (f.) Ph.D. wants position as translator and abstractor in chemical, medical and biochemical subjects. Would also make reports in the field of chemistry. Dr. Adrienne Eisner, 43 Maresfield Gardens, N.W.3.

Situations vacant

AN ASSISTANT INFORMATION OFFICER is required for the British Glass Industry Research Association. Graduate preferred; experience in a scientific or technical library essential. Experience of abstracting and handling technical enquiries is also very desirable, as is a knowledge of French and German. *Duties*: Abstracting and preparing abstract bulletin; answering technical enquiries, preparing bibliographies, some translation if possible, general library routine. Starting salary, within the range of £560–770, according to age and experience Further details can be obtained from the Secretary, British Glass Industry Research Association, Elmfield, Northumberland Road, Sheffield 10.

ASSISTANT ABSTRACTOR and LIBRARIAN required by the British Plastics Federation in London. Qualifications must include organic chemistry up to B.SC. standard, good reading knowledge of technical French and German, and some typing. Commencing salary in accordance with qualifications, but not less than £550 per annum rising to £700 after six months satisfactory service, with prospects for additional increments. Apply by confidential letter to the Staff Manager, 47/48 Piccadilly, London, W.1.

LIBRARIAN required, male or female, for scientific and medical library by well known Pharmaceutical House for their new research laboratory in Portsmouth area. Previous experience in this work essential, preference given to candidates with inter B.SC. standard in chemistry, physics and biology and A.L.A. Salary according to age and experience. Five-day week. Non contributory Pension Scheme. Canteen. Apply with full details and present salary to Personnel Manager, Box No. 2, Aslib, 4 Palace Gate, London, W.8.

LIBRARY ASSISTANT required in Research Library. Applications are invited from persons who have Library Association qualifications or who are partly qualified and intend to complete Registration. Good opportunities and prospects Please apply in writing or in person to the Women's Employment Department, Metropolitan-Vickers Electrical Co. Ltd., Trafford Park, Manchester 17.

MATHEMATICAL TRANSLATION. Translators of Russian or of Polish are sought to translate into English elementary mathematical material (not significantly beyond the calculus level) originally written in Russian or Polish. Fee to be arranged. Write to William H. Meyer, 415 Eckhart Hall, University of Chicago, Chicago 37, Illinois, U.S.A. When writing, indicate competence in both language and mathematics.

MULLARD RESEARCH LABORATORIES require a Deputy Librarian for their Central Technical Library, situated at the address below. The work involves the selection and distribution of technical literature, and the preparation of bibliographies for technical reports, etc. Previous experience in a technical library is preferred. Applicants should be educated up to General Science degree standard, and preferably not over 30 years of age. Salaries within the range of £650–£750 p.a. approximately. Apply Personnel Officer, Mullard Research Laboratories, Cross Oak Lane, Salfords, Redhill, Surrey.

PATENT ABSTRACTING and DOCUMENTATION ASSISTANT required at new research establishment near Caterham; subjects relating to automatic calculating and computing machines; knowledge of electronics essential. Apply stating age and experience to the Chief Engineer, Powers-Samas Accounting Machines Limited., Godstone Road, Whyteleafe, Surrey.

WOMAN ASSISTANT required for staff of monthly publication 'Science Abstracts', in senior capacity in clerical section. Good working knowledge of indexing and of Engineering and Physics periodicals. Familiarity with U.D.C. system an advantage. Good commencing salary according to qualifications and experience. Progressive post. Pension scheme. Luncheon Restaurant. Five day week. Apply giving full particulars to Assistant Secretary, I.E.E., Savoy Place, W.C.2.

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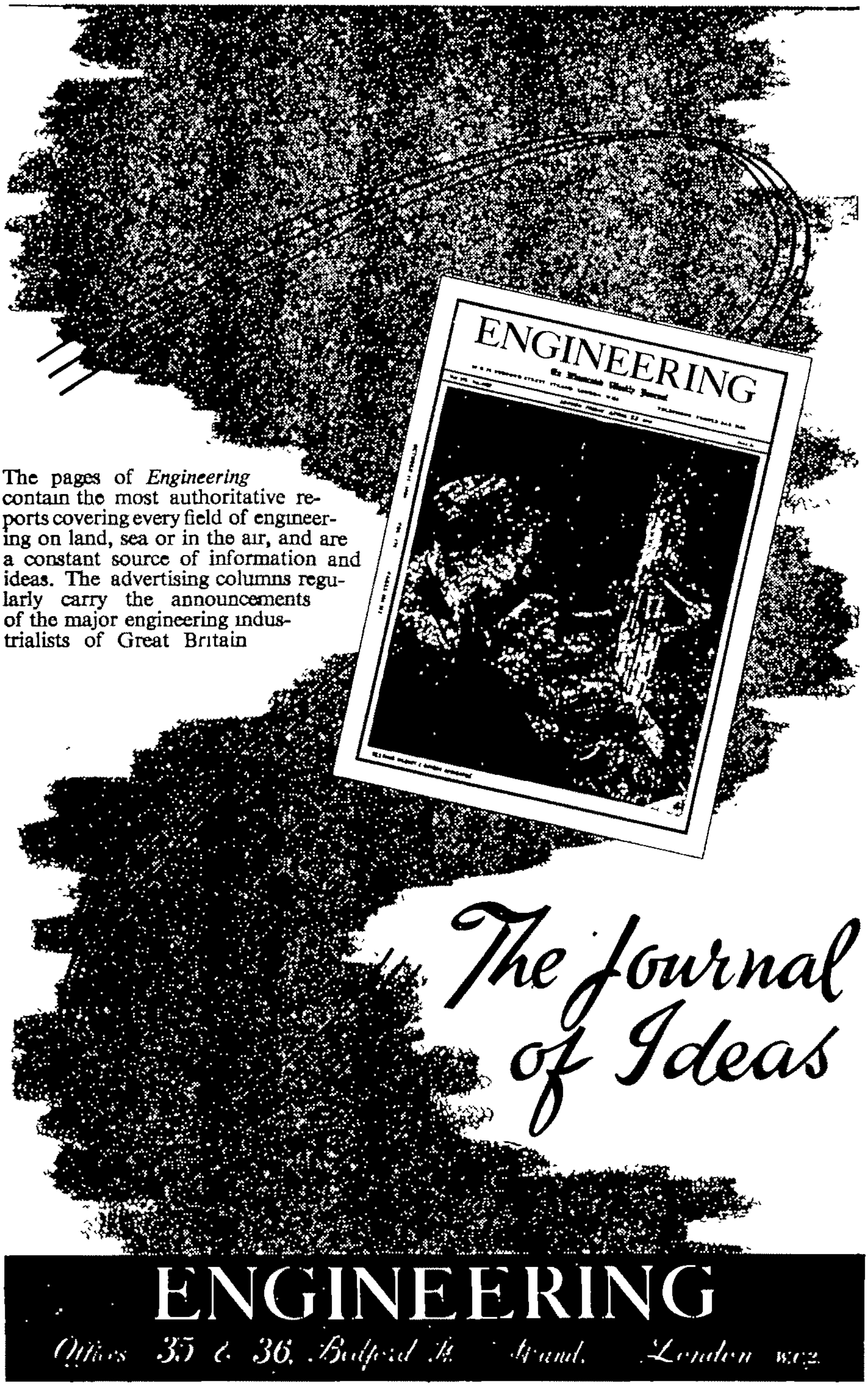

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ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 9 April 1957 Number 4

TRAINING OF SPECIAL LIBRARIANS AND INFORMATION OFFICERS

DISCUSSIONS BETWEEN ASLIB AND THE LIBRARY ASSOCIATION

WITH the February issue of this journal members of Aslib received, in connection with the next Annual General Meeting, papers supporting and opposing the establishment by Aslib of a Register of Information Officers. In them, reference was made to discussions between Aslib and the Library Association on the training needs of special librarians. A report on those discussions is now opportune.

The impulse to conduct a joint examination of training needs came from a Resolution adopted at a session of the Aslib Annual Conference held at Nottingham in September 1953. This requested the Council of Aslib:

'to give careful consideration to the desirability of making a formal approach to the Library Association with a view to ensuring an exhaustive joint investigation of all aspects of the training requirements of special librarians and of the provision of adequate facilities therefor . . .'

The Resolution was considered by the Council, remitted to the Education Policy Committee and, on that committee's recommendation, the Council in March 1954 decided to invite the Library Association to nominate six of its members to examine, jointly with six representatives of Aslib, training requirements for special librarianship and information work.

This invitation was accepted and the first meeting was held in June 1954. The two Associations' representatives were:

LIBRARY ASSOCIATION

Miss M. Exley
Mr. D. J. Foskett
Mr. J. C. Harrison
Mr. R. J. Hoy
Mr. W. B. Paton
Mr. R. R. Stokes
Miss L. V. Paulin (from mid-1956)

ASLIB

Mr. D. V. Arnold
Mr. B. Agard Evans
Miss Barbara Kyle
Dr. V. E. Parke*
Miss K. E. Watkins
Mr. G. Woledge

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* Later replaced by Mr. J. L. Farradane.

After Aslib's representatives had outlined their views and presented a draft syllabus—evolved by the Aslib Education Committee and modified slightly by the Education Policy Committee—the Library Association's representatives indicated that, in their view, it would be possible to modify the existing Library Association Registration examination syllabus so as to meet in one syllabus the needs of general librarians, special librarians and information officers. A sub-committee consisting of Mr. Arnold, Mr. Harrison, Mr. Paton and Mr. Woledge was accordingly appointed to draft a syllabus for consideration by all twelve participants in the discussions.

During the next two years five drafts were produced, some of them with specimen questions to illustrate the emphasis and orientation intended in certain subjects. Agreement was reached on the principle of a multiple-choice syllabus allowing each candidate, in addition to taking a common group of subjects, to choose from a wide range of alternatives. Considerable progress was made towards a framework for a syllabus capable of meeting the needs of both general and special librarians. In consequence, there is reason to hope that a new Library Association syllabus will emerge from the discussions, to the benefit of both categories of workers.

Both parties to the discussions were, however, compelled to the conclusion that the same syllabus could not be stretched to meet the needs of information officers. In particular, it did not prove possible to reach agreement on the relative importance to the whole syllabus of (*a*) administration and organization, (*b*) the specialized aspects of classification and indexing needed by information officers for purposes of information retrieval, and (*c*) the dissemination of information, including abstracting. There was also lack of agreement about the angle from which these subjects were to be treated.

The discussions were accordingly completed in January 1957, with the prospect of an improved Library Association syllabus for general and special librarians. In this there is clearly scope for continuing co-operation between Aslib and the Library Association. The special needs of information officers still remain to be satisfied.

SIGNPOSTS

SOME SELECTIONS FROM THE 1956 SPECIAL LIBRARY LITERATURE

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THIS series of annual reviews of the literature of special librarianship, which now reaches its fifth year, has been designed to help those most in need of the body of professional experience contained in the literature. Those special librarians or information officers with little or no professional training, who work in small departments far away from more experienced colleagues, have only the recorded knowledge in the literature to help them, but, because of lack of experience, they are often unable to sift from the mass of articles of varying value and character which crowd the pages of the professional journals the comparatively few items likely to be of practical use to them. For their benefit we present a selection of those papers really likely to give them solid help, leaving aside all purely theoretical and polemical articles, however important, and all literature on large libraries, unless they are likely to have applications in smaller ones. To these we add a selection of reference books likely to be of professional use to anyone in information work, including a number which he may wish to know about, even though he does not have them in his own library. The list is not restricted to work published in 1956, but is intended rather to be representative of items received in British libraries during that year. With the growing volume of library literature, the choice of a hundred or so items is bound to be in some respects a personal one, with which many may disagree, especially over the omissions, but it is hoped that all the items included will be of positive value.

Running an information service in industry is not an end in itself, but must always be seen in relation to the whole of the organization it serves, and indeed to the national problem of building up our industrial economy. An interesting paper by Sanders and Foskett[1] shows how an industrial library can give service at many different levels throughout a large combine of firms, while one by Kent[2] attempts to study the relationship between the use made of the technical library and a firm's financial success. Medical libraries have a number of problems peculiar to them, and no doubt all medical librarians will welcome the second edition of the Medical Library Association's *Handbook*[3]. The problems of providing an information service for firms too small to have any organized information department of their own are discussed in a paper by Kington[4]. Urquhart[5] describes the national situation as seen by the Department of Scientific and Industrial Research.

Technical college libraries, whose librarians had the previous year organized themselves as a sub-section of the University and Research Section of the Library Association, became one of the main points of contention in the year under survey. As much of the literature was polemical, only the most important and factual papers are included in this review. A survey conducted by the

London and Home Counties Regional Advisory Council for Higher Technological Education[6] showed how unsatisfactory conditions in the college libraries were, and this was taken up in proposals made by the Library Association[7]. The spark of controversy was applied in a paper by Urquhart[8] suggesting that, ideally, technical college libraries would be better centres than public libraries for giving an information service to industry. The replies from the public libraries were too numerous for mention, but the point was taken up in a further paper issued by the Regional Advisory Council[9].

Special librarians, who are almost certainly more aware than any other type of librarian that they are incapable of satisfying all inquiries from their own stocks, have a keen interest in all questions of co-operation between libraries, both in the orthodox systems and the unorthodox expedients which they have to use to supplement them. The orthodox systems are well described in a new edition of a pamphlet by Sewell[10]. A paper by Hill and Filon[11] explains the ways in which they are planning to meet the needs of special libraries. Thompson and Edwards[12] describe the Science Library's supplementary service. Exchange is of great value to special librarians as a means of augmenting their resources and they will certainly welcome the second edition of Unesco's *Handbook on the international exchange of publications*[13], in spite of its many inaccuracies.

Bibliographies always figure heavily in this annual review, because they are the basis of both reference work and the building of a good stock, and selection is always difficult owing to the wealth of material produced. There were two important additions in the field of bibliography of bibliographies. Besterman completed the third edition of his *World bibliography of bibliographies*[14], and the Deutsche Bücherei, Leipzig, produced a valuable index to bibliographies contained in books and periodicals[15]. National bibliography is represented by two items: Aslib's guide to British scientific and technical books based on fifteen years of *Aslib Book-List*[16], and a note by Ehrhardt[17] explaining the relationships between the competing national bibliographies in a divided Germany. The three guides to literature of a subject all come from the broad field of the social sciences, covering international relations[18], administration[19] and commerce[20] respectively. Closely allied to these are three guides to statistics produced by Hauser and Leonard[21], the U.N. Statistical Office[22], and the Library of Congress in conjunction with the U.S. Department of Commerce[23]. Outstanding subject bibliographies were produced on mathematical tables[24], atomic energy[25], maps and mapmaking[26], automation[27], infra-red[28], international relations[29] and English law[30]. Important library catalogues are often major contributions to subject bibliography, and were represented this year by a further instalment of the *London bibliography of the social sciences*[31].

Bibliographies of periodicals are so important to special libraries as to warrant separate consideration. New national lists were produced for Switzerland[32], India[33] and Belgium[34]. A subject list covering the biological sciences[35] was put out by the Library of Congress. Union lists were produced covering Rome and Florence[36] and Cambridge[37]. Lastly, Miss Gummer produced a bibliography of these lists[38].

Directories are scarcely less important to special libraries than bibliographies. Libraries and the library profession were extensively covered by directories during 1956. The first issue of the *Aslib Year Book*[39] was an important event, presenting a regularly revised list of members, with much other information of use to special librarians. The new *American library annual*[40] is not a directory of libraries but a guide to the organization of libraries and the library profession. Local guides were produced to the London public libraries[41] and the libraries of the Manchester area[42]. New national guides were published in Italy[43] and Norway[44]. On the international plane the F.I.D. produced a new edition of its *Directory of photocopying services*[45]. Directories to industrial research activities included a new edition of the Todd yearbook *Industrial research*[46], a guide to the work of the research associations issued by D.S.I.R.[47] and a new edition of *Industrial research laboratories of the United States*[48]. Owing to the importance of academic research, directories of universities and other academic bodies are nearly as important as the foregoing. The year 1956 saw the completion of the post-war edition of *Minerva*[49], while a Swedish directory[50] covers all types of institutional research. The year also saw the appearance of a new guide to American associations of all kinds[51].

Following on the reference books themselves come new editions of two books on how to use them: the third and final edition of the standard text-book by Roberts[52], probably one of the most helpful introductions to reference work, which appeared only a short while before its author's untimely death, and the second edition of the somewhat slighter book by Collison[53].

In the field of cataloguing, the literature was overshadowed by the prospect of impending changes in the cataloguing codes, affecting particularly the treatment of corporate authors, negotiations for which are proceeding not merely between British and American librarians but on a wider international level, with the aim of improving the bibliographical control of the literature by international standardization and collaboration. If much of this literature may appear too theoretical or advanced for the novice, it is nevertheless important that anybody starting a catalogue at this stage should be guided by the probable practice of the future rather than by that of the past. The shape of rules to come can be seen fairly clearly from an I.F.L.A. statement[54] and the way in which one library is anticipating the changes in the rules is described in a paper by Tooth[55]. At a less advanced, if more directly useful, level Miss Piggott made two useful contributions: a review of the practice in cataloguing government publications in a number of libraries[56] and a handy glossary of bibliographical terms frequently encountered in cataloguing foreign books[57]. A brief note on the filing of catalogue cards by Dewey[58], though it contains nothing really new, will no doubt be helpful for many of those for whom this paper is intended.

In the latest literature, cataloguing and classification are more and more seen as part of the whole subject of information retrieval. One aspect of this new movement to break away from traditional practices has been the revival of interest in the classified catalogue in the United States, and in 1956 Shera and Egan produced a text-book on the subject[59]. The literature on classification tends to be largely theoretical, and for the guidance of those for whom this paper is intended it is probably best to draw attention to the new tools for the classifier. There was considerable activity in this field in 1956, but all in rather restricted fields. Of the major schemes, only the U.D.C. was active, and produced a statement of the principles on which the revision is based[60], which should be read by all those using the classification, a special edition for agricultural libraries[61] and a second edition of the special edition for building libraries[62]. Among the special classifications activity was confined to the field of medicine. New editions were published of the classifications of Cunningham[63] and the Army Medical Library, now renamed the National Library of Medicine[64], while the sponsors of the Barnard Classification followed the example of Bliss in producing a bulletin[65] to publish extensions and amendments. The literature of mechanized information retrieval is at present largely confined to speculation for the future and limited applications to large systems, but it is of such potential importance that even the beginner cannot afford to neglect it entirely. He might therefore wish to look at a book such as that by Perry and others[66], which incidentally contains a good bibliography, and to know about a first-class abstracting service[67] which covers the broader field of the application of automation to intellectual work of all kinds. Despite all the newer methods, the production of traditional alphabetical indexes to individual books is still an important task, and one which sometimes falls to the lot of information departments. Useful guidance on this subject was given in an important paper on the principles by de Beer[68], and a note on the mechanics by Drachmann[69].

The literature on education for library and information work became if anything even more completely dominated by a controversy that is coloured by prejudice and interest on both sides, and in these circumstances only the actual helps to study are likely to be of assistance to the new entrant. The Association of Assistant Librarians continued to issue its guide to the examinations, but only the section on the new First Professional Examination[70] is likely to be of interest to industrial librarians.

The administrative side of library work is comparable in many respects to ordinary office work—indeed in some special libraries it may be part of the general office organization—and the literature on office management is often useful supplementary reading to the actual library literature. In the actual library press Hardkopf gives advice on the selection of office machines[71], McNeal discusses the relationship between professional and clerical staff[72], and McGaw reviews policies on discarding[73]. The application of work study techniques to library work is described by Risk[74] and Miss Scott[75], but the student will probably also benefit by consulting the text-book on the application of these principles to office work issued by the British Institute of Management[76]. A good general text-book on filing, such as that by Kahn and Yerian[77] and the discussion of weeding procedures by Record Controls Inc.[78], will be found valuable in any information department. Bunker's discussion of clerical assistance to research workers[79] will also be of interest to information staffs. Lastly, a lively little pamphlet on the occupational hazards of office work[80], issued by the Royal Society for the Prevention of Accidents, applies equally to library work and should be made compulsory reading for all who work in information departments, from the chief down to the newest junior.

As is often the case, the literature on library buildings published during 1956 was mainly concerned with large libraries, but the pamphlet put out by the American Library Association[81] covers ground common to planning for all types of library. A description of the use of the Compactus mobile shelving by Strahm[82] should interest all librarians with a serious space problem, especially as the equipment is now available in this country. For those in a position to have furniture made to their own specifications a description by Pilkington[83] of how desks were designed specially to hold all the stationery required for a particular job should prove a stimulus to a little private work study to improve their own efficiency.

The possession and handling of large stocks of materials other than the traditional printed book is one of the main characteristics of special libraries, and the handling of these special materials presents problems which are often of great importance. Collison in his book on the subject[84], now issued with considerable additions under a new title indicating its broader scope, covers the whole field in brief. The most important of the special materials are undoubtedly periodicals. The study by Brown[85] on the use of periodicals presents facts which are of great interest to those formulating acquisition or discarding policies, especially because the comprehensiveness of the work by far exceeds that of any previous studies of the kind. Miss Tallman gave quite a useful review[86] of the mechanics of claiming missing issues. A manual on the treatment of government publications issued by the American Library Association[87] and a study by Hassenforder[88] of the use of theses, though both limited in value to the English reader because of their foreign origin, nevertheless contain much useful information and many valuable suggestions.

The literature on document reproduction in its various forms continues to grow with the numbers of alternative processes and machines which are available, and only the most important and useful items can be noticed here. These include a review and comparison of the various photocopying processes by Verry[89], originally contributed to the Royal Photographic Society's London conference in 1953, and a further instalment[90] of the series of detailed studies of the comparative costs of photocopying processes carried out by the Admiralty on behalf of the O. & M. Division of the Treasury. Lewis and Offenhauser bring together the main facts about microfilm in a useful book[91], while more detailed studies include a new edition of the British Standard on microfilm readers and reels[92], advice on the storage of films and prints by the Eastman Kodak Company[93] and a description of an economical method of storing microfilm in conventional shelving by Weber[94].

Information officers, who are often put in charge of the production of publications of the organization they serve, have a natural interest in the literature on all forms of print and the substitutes for print which are playing an increasingly important part in scientific communication. They will therefore welcome an elementary introduction to paper by Smith[95] and a detailed guide to the choice of lithographic papers issued by PATRA[96]. A guide to type faces[97] is a handy work of reference which can be pinned on one's wall. A short paper by Steer[98] gives much good advice to those responsible for preparing copy for overseas publicity.

The subject of the preservation of books and documents, though it might at first be thought to be largely the province of the archivist and the rare-book department, has many aspects of practical interest to the special librarian. A whole issue of *Library Trends*[99] was devoted to this subject. The Library Binding Institute issued a useful pamphlet on the salvage of water-damaged books[100]. Miss Darlington gave a review of the various processes for the lamination of documents at present available in this country[101], stressing their value for the protection of current documents. For those possessing rare documents, Tottle gave a review of the atmospheric conditions required for conservation[102].

Questions of terminology are of importance in documentation, and guides to the meaning of new words are of great value in information work. The valuable reference work by Brown[103]—which is a dictionary of foreign roots commonly used in the formation of scientific words, with examples of their use and references from their English meanings—fulfils both purposes admirably.

One new library periodical of importance appeared during the year. This was the *Bulletin des Bibliothèques de France*[104], an amalgamation of the *Bulletin d'Informations de la Direction des Bibliothèques de France* and the *Bulletin de Documentation Bibliographique*. It contains articles reporting recent developments in French libraries, including the research work of the Service Technique, news items, and an extensive bibliography of library and documentation literature.

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62. INTERNATIONAL BUILDING CLASSIFICATION COMMITTEE. ABC; abridged building classification for architects, builders, civil-engineers; a selection from the Universal Decimal Classification. 2nd ed. Rotterdam, Section Documentation of the International Council for Building Research, Studies and Documentation; [London, British Standards Institution], 1955. 70 pp. (FID publ no. 261) 23*s.* 6*d.*
63. CUNNINGHAM, EILEEN R. Classification for medical literature; with the collaboration of Eleanor G. Steinke. 4th ed. rev. and enl. Nashville, Vanderbilt University Press, 1955. xix, 164 pp. $2.75.
64. UNITED STATES. National Library of Medicine. National Library of Medicine classification: a scheme for the shelf arrangement of books in the field of medicine and its related sciences. 2nd ed. Washington, U.S. Government Printing Office, 1956. xxxii, 313 pp. $2.
65. *Barnard Classification Bulletin.* London, London School of Hygiene and Tropical Medicine, 1956–. Irregular.
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67. *Data Processing Digest.* Los Angeles, Canning, Sisson & Associates, 1955–. Monthly. $24 p.a.
68. DE BEER, E. S. The larger index. *Journal of Documentation*, vol. 12, no. 1, March, 1956, pp. 1–14.
69. DRACHMANN, A. G. An experiment in indexing. *Libri*, vol. 6, no. 1, 1955, pp. 33–5.
70. ASSOCIATION OF ASSISTANT LIBRARIANS. The First Professional Examination, by Edmund V. Corbett. London, the Association, 1956. 35 pp. (The A.A.L. guides to the Library Association examinations; under the general editorship of A. J. Walford.) 3*s.* (2*s.* 6*d.* to members.)
71. HARDKOPF, JEWEL C. Office machines and appliances. *Library Trends*, vol. 5, no. 2, October, 1956, pp. 225–38.
72. MCNEAL, ARCHIE L. Ratio of professional to clerical staff. *College and Research Libraries*, vol. 17, no. 3, May, 1956, pp. 219–23.
73. MCGAW, HOWARD F. Policies and practices in discarding. *Library Trends*, vol. 4, no. 3, January, 1956, pp. 269–82.
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75. SCOTT, JOAN M. Work study—its applications to libraries. *Australian Library Journal*, vol. 5, no. 3, July, 1956, pp. 111–4.
76. BRITISH INSTITUTE OF MANAGEMENT. The measuring of work in the office. London, the Institute, 1956. vii, 20 pp. diagrs. (Office management series, 2.) 4*s.*
77. KAHN, GILBERT, *and* YERIAN, THEODORE. Progressive filing. 6th ed. New York, London, Gregg Publishing Division, McGraw-Hill, 1955. viii, 151 pp. illus. tables. diagrs. 19*s.*; $2.58 [Previous eds. issued by Remington Rand Inc., as *Progressive indexing and filing.*]

78. RECORD CONTROLS INC. Retention and preservation of records, with destruction schedules. 5th ed. Chicago, Record Controls, 1956. 46 pp. tables. $4.

79. BUNKER, L. H. Clerical help in scientific research. *O & M Bulletin*, vol. 11, no. 2, April, 1956, pp. 15–19.

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81. AMERICAN LIBRARY ASSOCIATION. Buildings Committee. Planning a library building: the major steps; proceedings of the institute at St. Paul, Minnesota, June 19–20, 1954; Hoyt R. Galvin ed., Kathryn A. Devereaux, assistant ed. Chicago, the Association, 1955. vi, 80 pp. illus. plans. tables. $3.

82. STRAHM, H. Eine umwalzende Neuerung im Magazin-system. *Nouvelles ABS & ASD*, vol. 31, no. 6, November–December, 1955, pp. 161–5.

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89. VERRY, H. R. Choice and costing of methods for document copying and reproduction. ROYAL PHOTOGRAPHIC SOCIETY. *Science and applications of photography*, 1955, pp. 597–600.

90. GREAT BRITAIN. Admiralty. *Common Services*. Comparative costs in reproduction methods, by V. Driver and W. Lord. London, Treasury, [1956]. 17, 21 pp. tables. mimeographed.

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92. BRITISH STANDARDS INSTITUTION. Microfilm, readers and reels. London, the Institution, 1956. 15 pp. tables. diagrs. (B.S. 1371:1956) 3*s.* 6*d.*

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94. Weber, David C. How to store microfilm cheaply. *Library Journal*, vol. 81, no. 16, 15 September, 1956, pp. 1978–80.

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97. Type identification chart. [London], Pitman, [1955]. Folded leaflet. 7*s.* 6*d.*

98. Steer, Vincent. Accent on export: points to be observed in preparing printed matter for overseas readers. *Small Offset User*, vol. 5, no. 57, July, 1956, pp. 229–33.

99. Tauber, Maurice F., *ed.* Conservation of library materials. *Library Trends*, vol. 4, no. 3, January, 1956, pp. 215–334.

100. Library Binding Institute. Instructions on salvaging water-damaged books. Boston, Mass., the Institute, [1956]. [3] pp. gr.

101. Darlington, Ida. The lamination of paper documents. *Journal of the Society of Archivists*, vol. 1, no. 4, October, 1956, pp. 108–10.

102. Tottle, H. F. Strong-room climate. *Archives*, vol. 2, no. 15, Lady Day, 1956, pp. 387–97.

103. Brown, Roland Wilbur. Composition of scientific words: a manual of methods and a lexicon of materials for the practice of logotechnics. [Washington], the author, 1954. 882 pp. $8. [Available from the author at the U.S. National Museum]

104. *Bulletin des Bibliothèques de France*. Paris, Direction des Bibliothèques de France, 1956. Monthly. 3,000 *fr.* p.a.

ASLIB HEADQUARTERS

Appeal for £45,000

MANY members of Aslib will know from their visits to Palace Gate that the offices at present occupied by the headquarters staff have become quite inadequate. Reference has been made to the difficulties which such crowded conditions have engendered in one Annual Report and in *Aslib Information.*

A search for a new headquarters building has been going on for two years. The combined needs of location, size, internal arrangement, planning regulations and price were hard to satisfy. However, a suitable property has now been found in South Kensington which should satisfy Aslib's requirements for a long time to come. One major obstacle was that the building was in an area zoned for residential purposes but, on appeal, the Minister of Housing and Local Government has given his consent to the use of the building as Aslib's headquarters because of the national importance of Aslib's work and its connections with technical education which is a characteristic of the South Kensington area.

The Council of Aslib has accordingly decided to proceed with the purchase of the property. As soon as the legal formalities have been completed an announcement will be made to members concerning the situation of the property and Aslib's plans for its development. To purchase a 70-years lease, convert the property and bring it into use, a sum of nearly £45,000 will be required. After considering the various possible means of raising this sum, the Council has decided to establish a special fund and to invite contributions from members of all categories. While negotiations have been in progress, a few member companies have been invited to start off the fund and the first £10,000 have already been received in this way. During the next few months all members will be invited by personal letter to make a donation to the fund. The appeal will be made to all categories of members, including individuals and those overseas, since it is thought that all will wish to have an opportunity of having a stake, large or small, in Aslib's new home. The generosity of those who make possible the acquisition of the new headquarters will be suitably recorded and their names publicly displayed in the new building. It is also hoped to list them in these pages from time to time.

The most generous response which has already been made without the launching of a major appeal is a sign of great confidence in the job that Aslib is doing, and the Council believes and trusts that, when they receive their invitation to contribute, all members will respond, in proportion to their means, as generously as the founders of the fund.

BRITISH UNION-CATALOGUE OF PERIODICALS

TWELFTH ANNUAL REPORT OF THE COUNCIL FOR THE YEAR ENDED 31ST MARCH 1955

THE year has been notable for the publication of the first volume of the British Union-Catalogue of Periodicals. Under the agreement with the publishers, Messrs. Butterworth & Co., Ltd., the work will be issued in four volumes; and this first volume, covering the letters A–C, was published simultaneously here and in the United States on 3rd October 1955.

Its reception by the Press and by individual users has been unanimously excellent, and leaves no doubt that it is regarded and welcomed as a standard and indispensable work of reference. The Council is much gratified by the welcome given to this result of its endeavours by librarians and research workers throughout the world.

Work on the subsequent volumes has been proceeding in accordance with the revised programme of publication. Considerable delay in the issue of the second volume has occurred owing to the printers' strike, but the opportunity has been taken to press on with the preparation of the remaining volumes.

At the end of March 1956, the munificent grant from the Rockefeller Foundation, which has made the compilation of the British Union-Catalogue of Periodicals possible, came to an end.

This grant, made at a time when the world was at war, is an outstanding example of friendly international helpfulness to a project of permanent value. We wish to put on record our grateful thanks to the Rockefeller Foundation for its most generous financial provision and to its Trustees and officers for their sympathetic and kindly consideration to the problems which have arisen.

The organization is now being financed by advance royalties from the publishers.

BUCOP has been represented at the International Congress of Librarians and Documentation Centres held at Brussels in September 1955 by Dr. E. Saenger; at the University and Research Section of the Library Association at Leeds in April 1955 by Miss M. E. Hammond; and at the Annual Conferences of the Library Association and Aslib at Southport and Blackpool in September 1955 by the Editor.

Our grateful thanks are due to the Trustees of the British Museum for continuing to provide us with accommodation and allowing us many facilities; and to members of staff of the Department of Printed Books who have provided much valued assistance.

Our thanks are also due to the Editor and to Miss M. E. Hammond, Chief Cataloguer, and Dr. E. Saenger, Cataloguer, who have worked at much pressure to ensure the effective appearance of the volumes in production.

BRITISH UNION-CATALOGUE OF PERIODICALS

INCOME AND EXPENDITURE ACCOUNT YEAR ENDED 31ST MARCH 1956

	Rockefeller Foundation			*Butterworth Royalties*			*Total*		
INCOME	£	s.	d.	£	s.	d.	£	s.	d.
Advance on Account of Royalties				2000	0	0	2000	0	0
Deposit Interest		8	9					8	9
		8	9	2000	0	0	2000	8	9
EXPENDITURE									
Administrative Expenses	12	10	0	12	10	0	25	0	0
Salaries	316	18	11	1871	16	3	2188	15	2
Field Work	35	4	8				35	4	8
Travelling and Conference Expenses	39	10	0				39	10	0
Editorial Expenses	10	12	9				10	12	9
Audit and Accountancy	1	11	6	1	11	6	3	3	0
Sundry Expenses	2	7	11		10	0	2	17	11
	418	15	9	1886	7	9	2305	3	6
DEFICIT FOR THE YEAR	418	7	0				304	14	9
SURPLUS FOR THE YEAR				113	12	3			
ACCUMULATED SURPLUS brought forward at 1st April, 1955	430	2	6				430	2	6
DEFICIT FOR THE YEAR	418	7	0				304	14	9
SURPLUS FOR THE YEAR				113	12	3			
	11	15	6	113	12	3	125	7	9
REPRESENTED BY:									
Cash at Bank	3	17	11	196	7	1	200	5	0
Cash in Hand	47	11	10				47	11	10
	51	9	9	196	7	1	247	16	10
Less Sundry Creditors	39	14	3	82	14	10	122	9	1
	£11	15	6	£113	12	3	£125	7	9

We have examined the above Income and Expenditure Account with the Books and Records of Aslib and certify that it is correct and in accordance therewith.

29 John Adam Street, Adelphi,
London, W.C.2.

30th October 1956.

(Sgd.) Reynolds Adams
Chartered Accountants

SELECTIONS FROM THE RECENT LITERATURE

Books and Pamphlets

American Management Association.
Establishing an integrated data-processing system: blueprint for a company program. New York, the Association; [London, Bailey Bros.], 1956. 183 pp. (Special report, no. 11) $4.50; 36*s*.

American Management Association.
Organizing for effective systems planning and control. New York, the Association; [London, Bailey Bros.], 1956. 192 pp. tables. diagrs. (Special report no. 12) $4.50; 36*s*.

American Management Association.
Pioneering in electronic data processing; company experience with electronic computers. New York, the Association; [London, Bailey Bros.], 1956. 159 pp. tables. diagrs. (Special report no. 9) $3.75; 30*s*.

*Association pour la Diffusion de la Pensée Française.
Livres français choisis à l'intention des lecteurs étrangers: érudition. Paris, [l'Association], 1956. vii, 162 pp. [Édité à la demande de la Direction des Relations Culturelles du Ministère des Affaires Étrangères]

Bond, T. T.
The use of stitched-binders in the maintenance and repair of library books; with an appendix on the development of library services in New Zealand, by Wynne Colgan. Auckland, N.Z., Bayard Book Co., 1956. [4], 95 pp. tables. 12*s*. 6*d*.

Brämer, Joachim, *and* Vogel, Dieter.
Die wissenschaftliche Fachbibliothek: eine Anleitung fur die Verwaltung von Instituts- und Betriebsbibliotheken. Leipzig, Harrassowitz, 1956. 177 pp. facsims. tables. diagrs. DM 8.20

British Federation of Master Printers.
Book impositions. [3rd ed.] London, the Federation, 1956. 52 pp. diagrs. 5*s*.

British Standards Institution.
Dimensions of folders and files for correspondence filing. London, the Institution, 1957. 8 pp. tables. diagrs. (B.S. 1467:1957) 2*s*. 6*d*.

Carey, G. V.
Punctuation; with an appendix by P. G. Burbidge. Cambridge, University Press, 1957. vi, 41 pp. (Cambridge authors' and printers' guides, VI) 3*s*. 6*d*.

Chemical Market Research Association.
Chemical market research in practice: based on a series of lectures presented at the Case Institute of Technology and University of Delaware, ed. by Richard E. Chaddock. New York, Reinhold; London, Chapman & Hall, 1956. xi, 196 pp. tables. diagrs. $3; 24*s*.

Eustis, William
A primer to the automatic office. Westboro, Mass , Automation Management, 1956. vi, 93 pp. illus. plates. diagrs. $7.50 [Contributions by Gilbert Dresser, William Alden, Franklin Wyman, jr.]

Great Britain. Select Committee on Estimates.
First report, together with the minutes of evidence taken before Sub-Committee F of session 1955–56 on 27th March, 1956, and subsequent days and appendices. Session 1956–57: Her Majesty's Stationery Office. London, H.M.S.O., 1956. xiv, 201 pp. 10*s*. 6*d*.

*International Federation of Library Associations.
Repertoire of the library associations members of the International Federation. 5th ed. La Haye, Nijhoff, 1955. 104 pp.

*Leipzig. Deutsche Bucherei.
Anschriften der Verlage deutschsprachiger Schriften. [Leipzig], Deutsche Bucherei, 1956. 107 pp. (Deutsche Nationalbibliographie, Reihe A: Neuerscheinungen des Buchhandels) [3*s*. 6*d*.]

New York. Public Library.
Classification schedules for printed, microcopy and phonorecord material in the Reference Department. 2nd ed. New York, the Library, 1955. xiv, 352 pp.

*Reifer, Mary.
Dictionary of new words; with an introduction by Eric Partridge. London, Peter Owen, 1947. xi, 234 pp. 30*s*.

Savory, Theodore.
The art of translation. London, Cape, 1957. 157 pp. 16*s*.

Stevens, G. W. W.
Microphotography· photography at extreme resolution. London, Chapman & Hall, 1957. xvi, 326 pp. illus. plates. tables. diagrs. 50*s*.

Thole, Henry C.
Automation and electronics: a guide to company experience. Kalamazoo, Management Research Service, 1956. 26 pp. $1

United Nations Educational, Scientific and Cultural Organization. Department of Mass Communication. *Clearing House.*
International rules for the cataloguing of educational, scientific and cultural films and filmstrips on 3″ × 5″ (7.5cm × 12.5cm) cards. Preliminary ed. Paris, Unesco; [London, H.M.S.O.], 1956. 53 pp. (Reports and papers on mass communication, no. 17) 2*s*., 100 *fr*.

United States. House of Representatives. *Committee on Government Operations.*
Availability of information from Federal departments and agencies; hearings before a subcommittee, parts 2–6. Washington,

U.S. Government Printing Office, 1956. 5 vols.
[Part 4: Availability of information from Federal executive agencies—panel discussion on scientific and technical information]

*The YEAR BOOK of technical education and careers in industry, 1957; ed. by H. C. Dent. London, Adam and Charles Black, 1957. xxxii, 1008 pp. 25*s*.

Articles and Papers

ANTHONY, L. J.
Sources of information in atomic energy. Harwell, Atomic Energy Research Establishment, 1956. 17 pp. mimeographed. (A.E.R.E. Lib/L1)

Les bibliothèques des universités et la recherche. *Cahiers des Bibliothèques de France*, no. 3, 1957, pp. 171–84.

BERNIER, Charles L.
Correlative indexes II: Correlative trope indexes *American Documentation*, vol. 8, no. 1, January, 1957, pp. 47–50.

BRABAND, Carl.
Copyright and the reproduction of published materials. *Unesco Bulletin for Libraries*, vol. 11, no. 2–3, February–March, 1957, pp. 48–52.

CHIU, A. Kaiming.
Problems of acquiring Far Eastern publications for American libraries. *Special Libraries*, vol. 48, no. 1, January, 1957, pp. 19–25.

DE VRIES, Louis.
Making a technical dictionary. *Babel*, vol. 2, no. 4, December, 1956, pp. 159–62.

DOWNS, Robert B.
Libraries in minuscule. *College and Research Libraries*, vol. 18, no. 1, January, 1957, pp. 11–18.

Expenditures for research and development in the United States, 1953. *Reviews of Data on Research and Development*, no. 1, December, 1956, pp. 1–4.

GRAY, Dwight E.
Scientists and government research information. *College and Research Libraries*, vol. 18, no. 1, January, 1957, pp. 23–27.

HAHN, André.
Les bibliothèques des universités et la recherche médicale. *Cahiers des Bibliothèques de France*, no. 3, 1957, pp. 25–50.

HAYKIN, David Judson.
What is needed by way of special classifications? *American Documentation*, vol. 8, no. 1, January, 1957, pp. 51–52.

HERNER, M.
Technical and managerial information for small firms provided by the U.S. Government. Washington, British Commonwealth Scientific Office (North America), 1957. 3 pp. mimeographed. (B.C.S.O. (N.A.) report no. 1111)

International conference on scientific information to be held in Washington in November 1958: conference plans and criteria for papers. *Informations F.I.D.*, vol. 7, no. 2, February, 1957, pp. 5–15.

KENT, Allen, *and* PERRY, J. W.
New indexing-abstracting system for formal reports, Development and Proof Services, Aberdeen Proving Ground. *American Documentation*, vol. 8, no. 1, January, 1957, pp. 34–46.

LUND, Torben
Photocopie, droit d'auteur et usage privé. *Revue Internationale du Droit d'Auteur*, no. 14, January, 1957, pp. 136–89.
[Text in French, English and Spanish]

MILEK, John T.
Abstracting and indexing services in electronics and related electrical fields. *American Documentation*, vol. 8, no. 1, January, 1957, pp. 5–21.

MINDER, Thomas.
On the fundamental theories of bibliographic organization. *American Documentation*, vol. 8, no. 1, January, 1957, pp. 1–4.

SALVAN, Paule
Le problème de l'information bibliographique. *Cahiers des Bibliothèques de France*, no. 3, 1957, pp. 101–17.

SAUNDERS, W. L.
Access to current literature on education through periodical indexes, with special reference to England. *Education Abstracts*, vol. 9, no. 1, January, 1957, pp. 1–18.

THOMSON, M. C., *and* HUGHES, W. H.
Photo-typesetting. *Library Association Special Subject List*, no. 14, January, 1955, 18 pp.

UNITED STATES. Department of Agriculture.
Leather bookbindings: how to preserve them, by J. S. Rogers and C. W. Beebe. Washington, U.S. Government Printing Office, 1956. 8 pp. illus. tables. (Leaflet no. 398) 5*c*.

UNITED STATES. Patent Office.
Problems in mechanizing the search in examining patent applications. Washington, the Office, [1957]. 29 pp. (Patent Office research and development reports) [Prepared by Simon M. Newman]

WYART, Jean.
Quelques réflexions sur la bibliographie scientifique et technique. *Cahiers des Bibliothèques de France*, no. 3, 1957, pp. 53–59.

All the above items may be borrowed from Aslib Library, except for those marked with an asterisk. These are mostly available for consultation in the Library, apart from a few for which locations in other libraries can be given by the Librarian.

ASLIB INFORMATION

ASLIB CALENDAR

THURSDAY 25TH APRIL. Winter Meeting, see paragraph below.

MONDAY 20TH–WEDNESDAY 22ND MAY. Aslib Annual Conference, at the Grand Hotel, Scarborough, see paragraph below.

WEDNESDAY 22ND MAY. Annual General Meeting at the Grand Hotel, Scarborough.

Aslib Annual Conference

Plans are now well advanced for the Annual Conference to be held at the Grand Hotel, Scarborough, from 20th to 22nd May. The Conference will begin with an informal dinner on Monday evening, followed by a Civic Reception and dancing generously provided by the Mayor and Corporation of Scarborough. The Conference Dinner will be on Tuesday.

Five papers will be presented:

Information methods: adaptation to growth, by Dr. R. E. Fairbairn, Head of Library Department, Dyestuffs Division, Imperial Chemical Industries Limited.

Work measurement: assessment of results, by Mr. B. H. P. Rivett, Head of Field Investigations, National Coal Board.

Lines of communication, by Dr. E. Martindale, D.S.I.R. Liaïson Officer in Scotland.

The proposed National Lending Library of Science and Technology: a survey of proposals, by Miss Rosemary Bunn, D.S.I.R., Intelligence Division.

'The best laid plans . . .', by Mrs. Beatrice Warde, Editorial Manageress, The Monotype Corporation.

It is hoped that delegates will plan to reach Scarborough by about 5 p.m. on Monday 20th May. The formal Conference proceedings will end by tea time on Wednesday 22nd May.

Aslib Winter Meeting

The last meeting of the season will be held at 6 p.m. on Thursday 25th April, at the Royal Society of Arts, John Adam Street, Strand, London, W.C.2. Tea will be served at 5.30 p.m.

Mr. W. R. Robertson, Public Relations Officer, London Transport, will speak on the public relations work of London Transport. He will deal with the subject as a function of management, and explain public relations technique, the groups of people involved, and the organization of departments. He will also describe the records system used.

Northern Branch

A joint meeting of Aslib Northern Branch and the School of Librarianship, Manchester College of Science and Technology, will be held in the Reynolds Hall of the College at 7 p.m., on Tuesday 30th April. Dr. D. J. Urquhart of the Department of Scientific and Industrial Research will speak on the 'National Lending Library of Science and Technology: Progress Report'.

The Chairman will be Professor R. Revans, Professor of Industrial Administration, Manchester College of Science and Technology.

Members who intend to be present should inform Mr. J. C. Harrison, Senior Lecturer, School of Librarianship, Manchester College of Science and Technology, Manchester 1, not later than Wednesday 24th April.

Scottish Branch

The Committee, which was re-elected in February, is busy completing plans for the 1957–58 programme. Suggestions for suitable items will be welcomed, and should be sent, as soon as possible, to the Honorary Secretary, Mrs. Margaret Spence, 15 Glencairn Crescent, Edinburgh, 12.

Sir Raymond Streat

Sir Raymond Streat, K.B.E., President of Aslib, has announced that he proposes to retire from his appointment as Chairman of the Cotton Board. He was 60 in February. He has offered to carry on until arrangements can be made between the Board of Trade and leaders of the industry for the appointment of a successor.

Death of Dr Paul Grodzinski

Members will be sorry to hear of the death, on 20th February, of Paul Grodzinski, DR.ING., M.I.MECH.E. He was 56. Dr. Grodzinski was born in Berlin but had made his home in England since 1938. He had been editor of *Industrial Diamond Review* since its foundation in 1940, and last year started his own monthly periodical, *Mechanisms: an international bibliography*. In 1943 he became head of the Industrial Diamond Information Bureau of Industrial Distributors (Sales) Limited. Since then he has been closely connected with Aslib as the Company's representative. We offer our sincere sympathy to Mrs Grodzinski and her son.

Professor of Library Studies

The announcement that Mr. Raymond Irwin has become Professor of Library Studies in the University of London marks a step forward in recognition of the importance of librarianship as a profession. This is the first occasion in this country on which library studies have been considered of sufficient importance to warrant independent professorial supervision.

The School of Librarianship and Archives was started in 1919 and Mr. Irwin has been its Director since 1944. We offer him our warmest congratulations.

British Catalogue of Music

The Council of the British National Bibliography has announced an important new addition to our national bibliographical services. *The British Catalogue of Music* is a current bibliography based on the music received in the British Museum under the Copyright Act. For the time being modern dance music and certain other kinds of popular music will be excluded but everything else, including foreign music deposited at the British Museum and available through a British agent, as well as literature of music, will be included. Printed catalogue cards will be available through the Printed Card Service of the *British National Bibliography*. The Catalogue will be arranged in two parts. The first will contain entries classified according to a system specially devised for this purpose and the second will contain entries in one sequence under composers, titles, instruments and any other suitable factors. The catalogue will be published quarterly and the last issue each year will be a cumulation, bound in cloth boards. The annual subscription will be £4. Inquiries should be addressed to the Council of the British National Bibliography, The British Museum, London, W.C.1.

Index of Technical Articles

Aslib library has received the first issue of a new publication: *Index of Technical Articles*. This is a new journal in which it is hoped eventually to index all scientific and technical periodicals appearing in Great Britain. The first issue is for February 1957 and covers periodicals received in January. The articles are arranged by a classification specially designed for the purpose, which some users may find rather broad and which does not appear to be applied consistently. There are author and subject indexes and a list of the periodicals. There are no abstracts but only brief annotations in a few cases where they are necessary to explain the titles. The *Index* is to appear monthly with a cumulative annual volume. The annual subscription will be 6 guineas. Inquiries should be addressed to: I.O.T.A. Services Limited, 38 Farringdon Street, London, E.C.4.

Two new Journals

Platinum Metals Review, vol. 1., no. 1., January 1957, is the first number of a new quarterly produced by Johnson, Matthey & Co. Limited, Hatton Garden, London, E.C.1. It will carry news of new developments in the use of the platinum metals, abstracts of technical literature, and new patents.

The Journal of Solar Energy Science and Engineering, vol. 1., no. 1., January 1957. The Association for Applied Solar Energy, 3424 N Central Avenue, Phoenix, Arizona, has issued the first number of this new periodical. It is the first scientific journal devoted entirely to the various aspects of solar energy research. In addition to original contributions, the journal includes information on research activities throughout the world, and abstracts of the technical literature supplementing the directory and bibliography in *Applied Solar Energy Research.* The annual subscription is $10.

The Treatment of Special Material in Libraries

A reprint is now ready of the second edition of this useful book by R. L. Collison; Reference Librarian, City of Westminster. It includes advice on how to handle illustrative material, business archives, microfilms and filmstrips, films, gramophone records, newspapers and periodicals, pamphlets, trade catalogues and maps. The price is unchanged at 10*s*. 6*d*. to members of Aslib, 12*s*. 6*d*. to non-members. Orders received since the first impression was sold out last year have been fulfilled.

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MATHEMATICAL TRANSLATION. Translators of Russian or of Polish are sought to translate into English elementary mathematical material (not significantly beyond the calculus level) originally written in Russian or Polish. Fee to be arranged. Write to William H. Meyer, 415 Eckhart Hall, University of Chicago, Chicago 37, Illinois, U.S A. When writing, indicate competence in. both language and mathematics.

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TECHNICAL INFORMATION ASSISTANT required by Bakelite Ltd. for their Technical Library in Birmingham. The work is principally in the field of high polymers and plastics and is interesting and varied. It involves the compilation and distribution of technical information and offers scope to someone with personality and initiative. A degree or equivalent qualification in chemistry is essential and library experience might be an advantage. Applications giving details of age, training and qualifications should be addressed to The Development Manager, Bakelite Limited, Redfern Road, Tyseley, Birmingham, 11.

THE BRITISH HYDROMECHANICS RESEARCH ASSOCIATION requires an Assistant Information Officer for specialised training in information work in the field of fluid mechanics. The work comprises searching, abstracting and classifying· literature and some general information work. Minimum qualification Inter. B.Sc. or equivalent, good English; French an advantage but not essential. Salary up to £600 p.a. according to qualifications and experience. Successful applicant will be eligible to rent a modern flat in the New Town of Harlow. Send full details to Director of Research, B.H.R.A. Harlow, Essex.

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For disposal

THE LIBRARY of the Institution of Gas Engineers, 17 Grosvenor Crescent, S.W.1, has certain numbers of the following periodicals for disposal: *Chemistry and Industry*, 1947–1951; *Industrial Finishing*, 1949–1953; *Mechanical World and Engineering Record*, 1947–1953; *Engineers Digest*, 1951–1953; *Municipal Engineering*, 1946–1951, *Electrical Industries, Export*, 1946–1951; *Electrical Times*, 1946–1953; *Electrical Journal*, 1946–1953; *Ceramics*, 1949–1953; *C.C.A. Gazette*, 1939–1953; *Times Review of Industry*, 1947–1954; *Light and Lighting*, 1949–1951.

Wanted

American Documentation Vol. 4. Nos. 2 and 3 NORTH-WESTERN POLYTECHNIC LIBRARY, Prince of Wales Road, N.W.5.

American Chemical Abstracts, 1940–1955 and Decennial Indexes. The Geigy Co. Ltd., Rhodes, Middleton, Manchester.

Schack, A. *Industrial heat transfer*, 1933, translated by Goldschmidt and Partridge. Details to the Librarian: British Cast Iron Research Association, Bordesley Hall, Alvechurch, Birmingham.

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Volume 9 **May 1957** **Number 5**

THE ROYAL SOCIETY'S INTEREST IN SCIENTIFIC PUBLICATIONS AND THE DISSEMINATION OF INFORMATION

BY D. C. MARTIN, PH.D., B.SC., F.R.S.E.

Assistant Secretary of the Royal Society

London, 5th March 1957

DR. D. C. MARTIN said that what he was about to say might appear to be somewhat superficial, perhaps, because, unlike the audience, he was no expert and from the Assistant Secretary's chair one obtained a general rather than a particular view.

He would first say a few words about the foundation of the Royal Society and then talk a little more particularly about its publications and other interests in information services.

The Society began about 1645. After Francis Bacon had published a book called *The new Atlantis*, propounding the experimental method of research, a number of men of learning gathered together in meetings in various places in London, including taverns, where they discussed ways of encouraging the new or experimental philosophy. At a time of civil strife it was not always easy to have regular meetings, and these gatherings were later described as meetings of the 'invisible College'. The 'College' was that described by Bacon in his *New Atlantis* as being the best means to develop this new experimental method.

When the civil war and the reign of terror were over and Charles II was restored to the throne, these natural philosophers decided to give themselves a more formal constitution and, on 28th November, 1660, a memorandum of association was drawn up. The Society was very proud that it still had this: it began on page 1 of the Journal Book of the Society. The Society was approved by the King a week after its formation and at this time it held its meetings at Gresham College. It came to be known as The Royal Society and in 1662 received its first Charter from King Charles II.

In 1663 King Charles presented the Society with a mace. The mace was still in use at the Society's meetings. It was placed before the President at each meeting of Council and Ordinary meeting of the Society. At one time it was thought to be 'the bauble' which Cromwell ordered to be taken away from the House of Commons in April 1653, but a former Assistant Secretary, Mr. C. R. Weld, proved conclusively that this was a groundless assertion. Mr. Weld wrote 'The mace in its possession was expressly made for the Society and given to it by its Royal Founder, and the associations appertaining to it, embracing the remembrance that around it have been gathered men whose names not only shed imperishable lustre on the Royal Society but on the civilized world, must hallow it to all lovers of science and truth.'

About a year later the King inscribed a Charter Book in which he described himself as 'Founder'. This book also was still in use by the Society and each Fellow, as he was formally admitted, signed the obligation which is inscribed at the top of each page. On the first page of the Charter Book were the names of such Fellows as Lord Brouncker, the first President, Christopher Wren, Robert Hooke, Henry Oldenburg, John Evelyn and Robert Boyle. These were some of the very able men who founded the Royal Society.

In its second Charter the Society received a year later a coat of arms and its motto *Nullius in Verba*—an indication that the Society would seek to verify all statements by an appeal to facts.

The King, in granting his Charter, stated:

> '. . . we look with favour upon all forms of learning, but with particular grace we encourage philosophical studies especially those which by actual experiments attempt either to shape out a new philosophy or to perfect the old. In order, therefore, that such studies which have not hitherto been sufficiently brilliant in any part of the world may shine conspicuously amongst our people . . . know ye that we, of our special grace . . . do ordain, establish and grant that henceforth for ever there shall be a Society . . . called and named . . . the Royal Society of London for improving Natural Knowledge (of which same Society we . . . declare Ourself Founder and Patron).'

This was a very brief sketch of how the Society began, and Dr. Martin could do little more by way of its general history than refer to a list of the Presidents.

Mention must also be made of two men—Robert Hooke and Edmond Halley. Robert Hooke was the first curator of the Society and it was his duty to set out the experiments at the weekly meetings. Edmond Halley was an early Clerk (or Assistant Secretary). Both had left an imprint on the Society. Halley, who gave his name to the comet, was probably the first geophysicist of the world. In 1956, the tercentenary year of his birth, the Society had put his name on the map of Antarctica by naming its International Geophysical Year station Halley Bay.

In 1671 a young man of twenty-nine years of age was elected. He was destined to ornament natural philosophy in a manner unexcelled by anyone since and to bring great renown to the Society through his illustrious works. He was Isaac Newton. It was during the presidency of Samuel Pepys that Edmond Halley became Clerk (or Assistant Secretary). Halley's own scientific attainments in astronomy and geophysics were outstanding, but in addition the world of science owed to him the publication by the Royal Society of Newton's *Principia*. Newton was indifferent to its publication and only by dint of great efforts by Halley was this great book given circulation. The manuscript of this immortal

PRESIDENTS OF THE ROYAL SOCIETY

Viscount Brouncker	1662–1677
Sir Joseph Williamson	1677–1680
Sir Christopher Wren	1680–1682
Sir John Hoskins	1682–1683
Sir Cyril Wyche	1683–1684
Samuel Pepys	1684–1686
Earl of Carbery	1686–1689
Earl of Pembroke	1689–1690
Sir Robert Southwell	1690–1695
Earl of Halifax	1695–1698
Lord Somers	1698–1703
Sir Isaac Newton	1703–1727
Sir Hans Sloane	1727–1741
Martin Folkes	1741–1752
Earl of Macclesfield	1752–1764
Earl of Morton	1764–1768
Sir James Burrow	1768–1768
James West	1768–1772
Sir John Pringle	1772–1778
Sir Joseph Banks	1778–1820
William Hyde Wollaston	1820–1820
Sir Humphry Davy	1820–1827
Davies Gilbert	1827–1830
H.R.H. The Duke of Sussex	1830–1838
The Marquess of Northampton	1838–1848
Earl of Rosse	1848–1854
Lord Wrottesley	1854–1858
Sir Benjamin Collins Brodie	1858–1861
Sir Edward Sabine	1861–1871
Sir George Biddell Airy	1871–1873
Sir Joseph Dalton Hooker	1873–1878
William Spottiswoode	1878–1883
Thomas Henry Huxley	1883–1885
Sir George Gabriel Stokes	1885–1890
Lord Kelvin	1890–1895
Lord Lister	1895–1900
Sir William Huggins	1900–1905
Lord Rayleigh	1905–1908
Sir Archibald Geikie	1908–1913
Sir William Crookes	1913–1915
Sir Joseph John Thomson	1915–1920
Sir Charles Scott Sherrington	1920–1925
Lord Rutherford of Nelson	1925–1930
Sir Frederick Gowland Hopkins	1930–1935
Sir William Henry Bragg	1935–1940
Sir Henry Dale	1940–1945
Sir Robert Robinson	1945–1950
Lord Adrian	1950–1955
Sir Cyril Hinshelwood	1955–

work, of which Laplace wrote 'The *Principia* is pre-eminent above any other production of human genius', was today held in a good state of preservation in the apartments of the Society as its most precious scientific treasure. The Society's Newton collection also contained the reflecting telescope made by his own hand in 1671. Isaac Newton himself became President in 1703 and he adorned that office until his death in 1727.

Newton's many fundamental contributions to mathematics, astronomy and optics were acclaimed by his contemporaries and had been the subject of admiration ever since. At the principal tercentenary celebrations of his birth—delayed by four years until 1946 because of the war—leading scientists from thirty-five nations came to pay tribute at a great scientific gathering arranged by the Society in London. Following this meeting it was decided to erect a 98-in. telescope in Britain to be known as the Isaac Newton Telescope. This will be at Hurstmonceaux. The Society took an interest in preserving Newton's birthplace at Woolsthorpe and it was presently engaged in preparing in five or six volumes the publication of the correspondence of Newton because his work continues to illumine natural knowledge. Newton was deeply interested in the Society's affairs and the Society perhaps owed more to Newton than to any other single individual. He took a dominant part in causing the Society to move from Gresham College to its own premises in Crane Court, Fleet Street, in 1710. It was also in 1710 that Her Majesty Queen Anne appointed the Society as constant

Visitors of the Royal Greenwich Observatory, a duty which the Society had exercised with great care and attention ever since.

After Newton's death Sir Hans Sloane succeeded to the Chair. He was an outstanding natural historian. His collections were bequeathed to the nation and resulted in the formation of the British Museum. He also did a great deal to improve the Society's finances.

No monarch since King Charles II did as much for the Society as King George III (1760–1820). He encouraged the Society by providing ships and money for expeditions to observe the transit of Venus across the sun in 1762 and again in 1769. These were important scientific expeditions and brought James Cook into contact with the Society. Cook's voyages were carried out under the scientific direction of the Society. His great work on the prevention of scurvy and in geographical and scientific discovery had important consequences, and his untimely death in 1779 at the hands of savages in Hawaii was deeply mourned throughout Britain. The Society struck a medal to commemorate Cook and this was widely circulated at the time.

King George III later (in 1780) provided the Royal Society with premises in Somerset House and since that time the Society had occupied premises provided by the Crown. Since 1857 the Royal Society had resided in Burlington House. In 1877 it moved into its present premises which were specially constructed on the same site to meet its requirements. When the Society moved into Somerset House Sir Joseph Banks, who was a keen and distinguished botanist and had been on one of Cook's journeys to Australia, had recently become President. He held office from 1778 until 1820, a period of forty-two years. He was a dominating personality. The development of science in this country during his presidency was largely his own interpretation as to how things should be done.

While he was President the Society did a great deal to encourage astronomy, meteorology and geodesy. Henry Cavendish and James Watt were making their contributions on the composition of water, Herschel discovered Uranus, Volta was sending to the Society accounts of his electrical discoveries. The Society was taking a leading part in establishing standard measures and today it remained a custodian of one copy of the standard yard and standard pound. Generally it could be said that during the presidency of Sir Joseph Banks the Society played an increasingly important part in public affairs due in some measure to the benevolent interest of King George III.

The brilliant Sir Humphry Davy succeeded Banks and steered the affairs of the Society for seven years (1820–27), and mention of Michael Faraday, Charles Darwin, John Dalton, Clerk Maxwell, in addition to presidents such as Thomas Henry Huxley, Kelvin, Lister, Rayleigh, Sir J. J. Thomson, Rutherford and Bragg, was perhaps sufficient to indicate that there had been no lack of distinguished successors to the founders of the Society.

After this brief historical background Dr. Martin proposed not to dwell on the Society's many activities other than publications, library, and other information services, and to leave aside the organization of the Society for the conduct of its affairs under its Council, its elaborate machinery for the election of its Fellows, the awards of its medals, the direct support of scientific research, its many joint activities and its public responsibilities in administering Parliamentary grants-in-aid, including a wide-ranging responsibility in representing this country in international scientific affairs. The International Geophysical Year was an important current example. In carrying out these various duties the Council was assisted by about one hundred committees.

If more information was wanted about these matters, they could perhaps be dealt with at question time.

The speaker said that he would now like to say something about, first, the Society's library; second, the Society's publications; third, the Parliamentary grant-in-aid for scientific publications; and fourth, the Society's interest in information services generally. Where he departed from historical fact and expressed opinions, these were entirely his own and did not necessarily represent the Society's view.

The Society's library began with the Society in 1660. Robert Hooke, the Society's curator, responsible for the setting up of the experiments performed and discussed at its weekly meetings, bought regularly for the Society's library and on the shelves were books with his note of purchase on them. Then, as now, Fellows presented books of which they were the authors. The Society's Charter authorized the publication of works written by its Fellows. In 1667 the Society received as a magnificent gift, through the agency of John Evelyn (one of the founders and later a Secretary), from Henry Howard, later Duke of Norfolk, the library of Arundel House. This was one of the finest private libraries in Europe. It consisted of 2,700 printed books and 570 manuscripts, many of which were not scientific, but the Society was given a completely free hand to use the library as it thought fit. In many of the volumes the bookplate was by Albert Dürer. The manuscripts were exchanged many years later, in 1831, with the British Museum for scientific books of equivalent value.

In 1924, with the permission of the Duchess of Norfolk, the non-scientific books, which had been previously catalogued by the Society, were sold to form a fund called 'The Arundel Fund', the income of which still provided a contribution towards the maintenance and improvement of the library. Among the thousand or so scientific books which the Society still possessed there were some fifty incunabula and some fine printings of the sixteenth century. The library had had a steady growth, many of its most valuable holdings being presentation copies from the authors, for example the Society had the first edition of *The origin of species* from the author. Indeed, this emphasis on having in the library all works by Fellows past and present, books about Fellows and the Society itself, was one of the principal elements of current library policy. Fellows on election were encouraged to write a personal record of their life up to the date of election and to keep it up to date after election. This collection of material about Fellows provided much important material with which to weave the history of science and it was supplemented by purchases of books on the history of science.

Another distinctive feature of the library was the very extensive collection of the publications of learned societies, national academies and similar institutions of the whole world. The Society possessed long runs, many of them starting with the date of foundation of these bodies. This collection must be one of the finest of its kind in the world.

Recently the Society had been collecting mathematical works, mainly periodicals, as it had become aware that there was a need for a library of this kind in central London.

The holding was about 150,000 volumes, about 30,000 being book titles and the remainder periodicals.

The last printed catalogue of books was published in 1883. In the last war the removal of the library caused an upheaval and since then all the books had been recatalogued and rearranged. About half of the new catalogue had been typed on cards and the work was continuing. The last printed catalogue of periodicals was published in 1912. These too had been rearranged and recatalogued since the last war. The present holdings were, of course, listed in the *World list of periodicals,* towards the cost of which the Society had provided financial assistance from time to time.

The library contained many valuable manuscripts, such as the *Principia,* which had already been mentioned. There were also four manuscript works of Malpighi with his original drawings, 300 letters of Anthony van Leeuwenhoek of Delft, fifty-three volumes of the MSS. of Robert Boyle, as well as three of his commonplace books. Other important collections were the Blagden letters and papers of 1,215 items, and the Sir John Herschel papers of 10,058 items. All the Society's Council minute books, its Journal books recording the proceedings of ordinary meetings, and its letter books, had been preserved. So too were early communications of scientific papers. These were all well indexed in a number of catalogues.

About seven years ago it was decided to bring the cataloguing of all MSS. up to 1900 into good order, and with financial help from the Pilgrim Trust this had now been achieved, and the cataloguing of all MSS. was currently being continued into the present century. A guide to the archives, prepared by Mr. Robin Bluhm, a member of the Society's staff, appeared in volume 12, part 1, of *Notes and Records* published by the Society in August 1956 and was available as a reprint (price 2*s.* 6*d.*). The speaker warmly recommended anyone interested to read this account of the Society's valuable collection of MSS.

From the beginning the Society had regarded the publication of communications made to it as one of the most important means of improving natural knowledge. Within three years of its first Charter, the *Philosophical Transactions* was begun by Henry Oldenburg, one of the first secretaries, and it had continued ever since. From the appearance of the first number on Monday, 6th March 1664–65, the preparation, printing and publication of this work were for some time 'the single act of the respective Secretaries', including the financial responsibilities of the venture, though some supervision was exercised by the President and Council. It was only with the forty-seventh volume in 1753 that the publication was placed directly in the hands of the President and Council. The speaker could think of no better way of describing the publication policy of the Society than that set out in the introduction nearly three hundred years ago.

> 'Whereas there is nothing more necessary for promoting the improvement of Philosophical Matters, than the communicating to such, as apply their Studies and Endeavours that way, such things as are discovered or put in practice by others; it is therefore thought fit to employ the Press, as the most proper way to gratify those, whose engagement in such Studies, and delight

> in the advancement of Learning and profitable Discoveries, doth entitle them to the knowledge of what this Kingdom, or other parts of the World, do, from time to time, afford, as well of the progress of the Studies, Labours, and attempts of the Curious and learned in things of this kind, as of their complete Discoveries and performances: To the end, that such Productions being clearly and truly communicated, desires after solid and useful knowledge may be further entertained, ingenious Endeavours and Undertakings cherished, and those, addicted to and conversant in such matters, may be invited and encouraged to search, try, and find out new things, impart their knowledge to one another, and contribute what they can to the Grand design of improving Natural knowledge, and perfecting all Philosophical Arts, and Sciences, All for the Glory of God, the Honour and Advantage of these Kingdoms, and the Universal Good of Mankind.'

The *Philosophical Transactions* is now the senior scientific journal in the world.

As previously mentioned, the Society had authority under its Charter to publish separate works on natural knowledge. The first of these was *Sylva, or a discourse of forest trees*, by John Evelyn in 1664. In the following year there was published Robert Hooke's magnificent *Micrographia, or some physiological descriptions of minute bodies made by magnifying glasses*. Some thirty others were issued during the first forty years of the Society's existence, the most renowned being Newton's *Principia* in 1687.

The present form of the *Transactions*, a large quarto, was introduced in 1792, and from 1887 (with volume 178) the *Transactions* had been issued in two parts—Series A containing papers of a mathematical or physical character and Series B containing papers of a biological character. Each part consisted of a single scientific paper of varying length. The Society was now at volume 248 in Series A and 239 in Series B.

In 1852 were published for the first time the *Proceedings of the Royal Society*. Initially they consisted of abstracts of the *Transactions*. With the third volume some more extended reports were included, and with the seventh volume (1854–55) many papers were published which had not appeared previously in the *Transactions*. Soon the *Proceedings* were carrying many papers of importance and in 1904 the *Proceedings* too were divided into Series A and Series B, as was done for the *Transactions* in 1875. The *Proceedings* Series A and Series B were now the Society's principal media of publication and the number printed and distributed was higher than that of the *Transactions*. *Proceedings* Series A now appeared at about fortnightly intervals.

Obituary notices of Fellows were published in the *Proceedings* until 1932 when they were published separately as an annual volume in paper covers. Two years ago they were issued in book form entitled *Biographical memoirs of Fellows of the Royal Society*. These memoirs were written *by* leading men and women of science *about* leading men and women of science, and no finer source of scientific appreciation of the most distinguished scientists existed anywhere else. They deserved a much wider circulation and efforts to make them better known were being successful.

In 1898 the Society issued its first *Year Book* to provide the Fellows with a convenient compendium of information regarding the Fellowship and various activities of the Society. It contained a list of Fellows, the membership of committees, Statutes, regulations concerning medals, funds, the Report of Council, and reports on researches sponsored by the Society, as well as the Society's accounts. It was a very useful reference book to all scientists, and for the Society's Officers and staff quite indispensable.

In 1938 *Notes and Records* was first issued. This was a publication containing much of historical interest concerning the Society and its Fellows, as well as accounts of the Society's Conversaziones and Anniversary Dinner speeches and so on. The present Editor was Sir Harold Hartley.

In 1940 the fourth edition of *The Record of the Royal Society* appeared. This was a well-documented account of the Society's history extending over 600 pages. It was Dr. Martin's hope that a fifth edition would appear in the tercentenary year 1960.

About ten years ago the Society began issuing the *Royal Society Mathematical Tables*, a series of tables giving values for a certain number of mathematical functions and a continuation of the series of volumes of tables issued previously by the British Association.

Maintaining the highest attainable standards in publishing scientific papers was the greatest service scientific societies could render to the community, and successful journals of high quality provided a stimulation to scientific endeavour of the greatest importance. The quality of scientific content was maintained by high-class refereeing. In the Royal Society papers could only be communicated by Fellows, and in the act of communication Fellows not only guaranteed the scientific content but assumed responsibility for the quality of the writing. The choice of a referee rested with the appropriate Secretary of the Society and the respective Chairmen of the Society's several Sectional Committees. Each Transaction paper must have two referees in addition to the communicator. Whether a paper went into the *Transactions* or the *Proceedings* was almost entirely a matter of the length of the paper. *Notes on the preparation of papers to be communicated to the Royal Society* were issued gratis to all intending authors. Strict house rules about presentation were observed to prevent any fall from the high standards the Society set itself. Printing was of high quality.

Given the quality of a paper, the next important factor was speed of publication. After the war the delays in scientific publications were becoming serious and discouraging. The Society took energetic steps to improve the situation, and whilst pre-war standards had not quite been achieved—and he doubted whether they ever would be—the Society had an average delay of about five to six months between the receipt of the paper and its publication in *Proceedings, Series A*. One interesting aspect of speeding publication was the creation some years ago of a committee consisting of three scientists, three master printers and three trade unionists. This was at a time when compositors were in very short supply and much useful co-operation was received.

It was not sufficient merely to publish good quality papers promptly, at any rate for the Royal Society. It was the Society's chartered duty to disseminate the information, and this it did by circulating papers not only to Fellows but to the scientific world at large. Just over two years ago the Society decided to undertake the distribution of its publications itself and to ensure that they reached the ever-growing number of scientists throughout the world. This was done by assiduous and detailed promotion of sales throughout countries with scientific institutions. Not only did the information reach those who wished to have it, but the Society's publications account had been improved.

Financial independence in this matter of publication was highly desirable and the speaker believed it could be achieved by most scientific societies. He would urge that every society in financial difficulties on publications should determine to correct the position. In this, help might be sought under a scheme financed by the Nuffield Foundation, in which he had been concerned. The Foundation had set aside £40,000 to assist learned societies to help themselves by taking steps to put their publication accounts in good financial order. An expert in publishing visited a society to discuss its problems; and if money was required to help implement recommendations acceptable to the society concerned, consideration was given to these recommendations by a scientific journals committee of the Foundation. The scheme was in an early stage but a pilot run on a few societies had convinced the speaker that it would be of great benefit to scientific societies which were in financial difficulties. The biggest obstacle encountered was the reluctance of some scientific societies to forgo a belief that, somehow or other, the Lord or Her Majesty's Government would provide money needed for their respective publication programmes. Whatever the arguments for this point of view—and arguments could be made—it was a far, far better thing to achieve economic independence in this matter of scientific publication. Dr. Martin was sure it could be done in many instances and he hoped societies would set about doing it with a will and, if necessary, with the help the Nuffield Foundation might be able to give.

As a footnote to this section of his talk Dr. Martin added that several commercial publishing houses had realized that there was quite a bit of money to be made in scientific publications, especially as this country was favourably placed in world competition as far as printing costs went. Scientific societies should be the guardians of the quality of scientific publication of original work in learned journals. That was their chief *raison d'être*. The commercial houses had another aim in life and their high charges, justified on commercial grounds, might become a danger. Properly organized, the scientific societies could do the job incomparably better and at lower costs, for they were based on a tradition in which voluntary assistance, often amounting to dedication, was freely given. It was an asset beyond price, and it could keep them on the right rails. Scientific societies must continue to predominate in scientific journal publication, for the moment commercial gain began to dominate this field the welfare of the scientific community would suffer.

This might seem the wrong moment to refer to the Parliamentary Grant-in-Aid for Scientific Publications; but it was not so. This grant was first sought by the Royal Society in 1895 and £1,000 was made available to assist publications of learned scientific societies. In 1925 the Treasury asked the Royal Society if it would administer an additional amount of £1,500, making a total of £2,500. After the war in 1945 it was £7,000. In 1946 it was £10,000; in 1951 £24,000; in 1954 £26,000; and in 1957 it would be £20,000. In 1949 the Society was asked by the Treasury to administer a small grant of £1,000 to assist the libraries of learned societies, and this had remained at the same figure ever since.

Compared with the total expenditure on scientific publication by scientific societies in this country £20,000 was quite small, probably about 5 per cent. or less. It was against this background that this grant-in-aid must be regarded. It was completely wrong to assume that it was a *regular* source of financial assistance, and any society which relied on it for annual subventions was living in a fool's paradise. It could only help temporarily lame dogs and was not used in a way that would make dogs permanently lame. Its terms of reference were:

> 'It is provided for the assistance of scientific publications in the United Kingdom, particularly, but not exclusively, those of scientific societies and institutions. It is administered by the President and Council of the Royal Society, who have power to attach to any grant such conditions as they may deem desirable. Normally no grants are made in respect of purely commercial productions.'

The President and Council were assisted by a Scientific Publications Board consisting of twelve members, usually Fellows of the Society; the membership of the Board changed by one-quarter each year. Press announcements about this grant were made twice a year and applications were considered by the Board in July and December. Approximately thirty to forty grants were made annually. Some financial help for the *Aslib Directory* was given a few years ago.

The authority to attach conditions had been used in recent years to encourage applicants to stand on their own financial feet. The combined knowledge of members of the Board was very extensive and grants were, he believed, only recommended when real benefit was likely to result. Societies helping themselves by bringing up subscriptions and selling prices to present-day levels were far more likely to be helped than those who remained at pre-war figures. The benevolent encouragement given in this way by the Royal Society had resulted in a reduction in the amount applied for and the amount of the grant was diminishing. Dr. Martin believed a much healthier state of affairs was being brought about in this way. Recent increased printing costs and postage rates might call for a temporary increase (and this was taken into account in the 1957 estimates) but his own view was that the smaller this grant-in-aid the better for the British scientific community and the sooner it approached vanishing point the better.

A grant of £2,000 per annum from the Wellcome Foundation for the assistance of publications coming within the terms of the will of Henry Wellcome was also administered on the advice of the Scientific Publications Board at present. This will, as would be known, related to tropical medicine.

Both publications and a library service were indications of the Society's early and continuing interest in the basic information services to scientists. Meetings, lectures and discussions were another aspect of this. It was from the point of view of the working scientist that the Society approached the other aspects of information services. From time to time it had given positive leadership when this seemed desirable and by appointing representatives on appropriate bodies it attempted to keep the needs of the working scientist prominently before those who organized information services outside the Society.

In the development of scientific information services by the Government the Society had been consulted from time to time.

As an instance of an important contribution mention might be made of the *Catalogue of scientific papers*. This was a nineteen-volume work with 1,200,000 entries, being a complete index of papers in over 1,500 journals published between 1800 and 1900. The proposal first came before the Society in 1857 and the last volumes appeared in the early nineteen twenties. At first, it was to be a manuscript catalogue, and its preparation in this form called for a great deal of effort from Fellows, especially as the libraries of foreign scientific academies were brought into the scheme. It was agreed, however, that the catalogue should be printed at the public expense, and in doing this the Lords of the Treasury had regard 'to the importance of the work, with reference to the promotion of scientific knowledge generally, to the high authority of the source from which it comes, and to the labour gratuitously given by members of the Royal Society for its production'.

The Stationery Office began printing in 1866 and completed in 1872 the first six volumes covering from A to Z the scientific literature from 1800–63. Volumes 7 and 8 for the period 1864–73 followed in 1879. The Stationery Office withdrew from the printing but a Parliamentary gift, and also other generous gifts from Dr. Ludwig Mond, enabled the work to go on. The Society from its own funds also contributed considerable sums. There still seemed to be a demand for the catalogue and a reprinting was in contemplation. This sustained effort over seventy years in cataloguing the scientific literature of the last century was a substantial contribution to which the speaker made no apology for recalling attention.

Continuing beyond 1900 with so great a work was beyond the capacity of any single organization at that time and, at the instance of the Royal Society, other nations were invited to co-operate in the continuation of the catalogue. As a result, a series of international conferences took place in London between 1896 and 1900 and a scheme for an *International catalogue of scientific literature* was drawn up. The Royal Society agreed to act as publishers on behalf of an International Council and to advance sufficient capital to start the enterprise. The work began bravely with annual issues each of seventeen volumes. At quinquennial intervals the International Council met and resolved on each occasion that 'in view of the success already achieved the *Catalogue* be continued for a further five years'. This went on until the first world war made it quite impossible to continue. The project was terminated and in 1922 the Royal Society's Treasurer was asked to close the accounts. After a thirteen-year period of winding up and trying to collect debts, the Royal Society found itself about £15,000 out of pocket on this interesting and valuable international enterprise which thus came to an end.

The rapid expansion of scientific literature called for a different pattern for its cataloguing and the many abstracting agencies now performed in their own way the task begun just about one hundred years ago. It might be of interest to interject a brief reference here to an already vast and rapidly growing abstracting agency which was attempting a comprehensive abstracting service of scientific literature. This was the Institute of Scientific Information of the U.S.S.R. Academy of Sciences, which Dr. Martin visited last May in Moscow. He was told that 11,000 journals were abstracted annually, 9,000 of them foreign to the U.S.S.R. Abstracts were issued in about twelve main fields of scientific endeavour. The full-time staff was 600 and in addition there were many part-time abstractors. It fulfilled requests for 3,000 full translations per annum and he was told that 8,000 papers were reproduced daily on its photostat equipment. Such was the scale of a modern effort to signpost the routes through the vast maze of modern scientific publication.

In scientific papers it was important that there be agreement on symbols, signs and abbreviations, and in 1937 the Royal Society, the Chemical Society, the Faraday Society and the Physical Society jointly appointed a Committee which prepared and issued a *Report on symbols for thermodynamical and physico-chemical quantities and conventions relating to their use*. This was widely adopted for use in all the principal British scientific journals. It was also adopted by the British Standards Institution.

The Committee still existed. After the war there was a great deal of correlation of views on an international level through the International Union of Pure and Applied Chemistry and the International Union of Pure and Applied Physics and a new edition of recommended usage was issued in 1951. This report was the standard work on this subject, and thousands of copies had been distributed through the participating societies. It was still much in demand.

No account of the Royal Society's interest in scientific information services could omit reference to the Society's British Commonwealth Scientific Information Conference of 1948. This was arranged as a consequence of a request from the 1946 Empire Scientific Conference and with the help of many organizations in this country, including Aslib, the Society made elaborate preparations for a fortnight's intensive conference activity, when the whole gamut of information services for the scientist was given a thorough review. The fortnight concluded with a series of recommendations covering the whole field from the writing of scientific papers to their use by librarians. A Scientific Information Services Committee advised the Council on the implementation of these recommendations and many of those present were familiar with some of the consequences. The speaker did not propose to review them but would like to refer briefly to some of them.

Widespread support had been forthcoming for the *Fair Copying Declaration*. There was no doubt about the help it had been to the working scientist. There was no need to explain it as the speaker felt sure everyone present was familiar with it. A new Copyright Act had become law recently. This in no way disturbed the Fair Copying Declaration, which was a permission from the publishers to copy within specified limits for the purposes of private study. Irrespective of the Fair Copying Declaration the new Act did, however, go some way towards permitting copying under regulations, now in draft, on which the Royal Society, *inter alia*, had just been invited to comment.

Another edition of the *List of publishing organizations subscribing to the Fair Copying Declaration* had just been printed and came off the press on 4th March 1957. Anyone who would like a copy was welcome to it. It did not say much in addition to what appeared in earlier issues, but it did mention the new Copyright Act.

Apart from the Conference report itself, there had been a number of post-Conference publications by the Society. Other publications had been issued by appropriate bodies; for example, the D.S.I.R. guide to their own research organizations and a guide to research in the universities of the United Kingdom, and there would be a new edition of the *Aslib Directory*. Some of the other publications had been issued at the request of the Abstracting Services

Committee formed after the Conference and continuing still—now at a quieter tempo. It had been officially recognized as an advisory body on abstracting aspects of documentation matters to the United Kingdom National Commission of Unesco.

Another recommendation of the Conference urged the more widespread use of typewriter photo-offset printing methods for scientific publications. An experimental unit had been set up at the Royal Society under Mr. C. A. Ronan to explore the possibilities of this 'pro-printing', as it had been called, and to study and encourage its use. It had proved to its satisfaction that there was an area of printing for scientific societies for which this method was eminently suited. It was used for a great deal of the domestic work at the Society and it continued with its missionary work in this regard. The adoption of the method for *Science Abstracts* was an encouraging proof of its applicability. Mr. Ronan had written an appreciation of the method in relation to pro-printing scientific material. Perhaps the most important point of all was the necessity of maintaining the highest standards in the preparation of the copy.

The Society, in its capacity as the adhering body to the International Council of Scientific Unions and its member unions, was in touch with a number of international enterprises on information services. Two examples were given. The I.C.S.U. Abstracting Board, whose chief task was to facilitate the exchange of advance proofs of scientific papers, so that abstracting agencies could hasten the appearance of abstracts, had been successful in physics abstracting, where Britain, France, Russia and Germany were co-operating. The second instance was the International Geophysical Year, where the collection of observations into World Data Centres was being sorted out now and where there was a publications committee. It was making plans for a new publication shortly to appear under the title of *Annals of the International Geophysical Year.*

Now there was news of another Scientific Information Conference—this time in the United States of America—ten years after the Royal Society Conference. At the suggestion of Aslib and others, it was proposed that the Society set up an *ad hoc* committee to co-ordinate the British contribution to this conference. Thus the Society continued its interest in this ever-widening problem.

From what he had said, Dr. Martin hoped that his audience would feel that the Society's past interest in this field demonstrated that it had not been lacking in leadership. He had no doubt this would continue.

DISCUSSION

The CHAIRMAN (Mr. Leslie Wilson, Director of Aslib) said that it was refreshing to hear Dr. Martin say there was no reason why the publications of scientific societies should not be self-supporting. He believed that some comparisons had been made between scientific societies and commercial firms as publishers. Members might know of a number of instances where co-operative publishing ventures had been undertaken to the advantage of both the society and the commercial publisher concerned. In general, the society had been responsible for the compilation of the material—including the maintenance of proper standards—and the publisher had been responsible for the commercial aspects. The *British union-catalogue of periodicals* was a case in point. Did Dr. Martin favour the growth of such ties or would he prefer to see a society undertake complete responsibility for all aspects of its publications?

DR. MARTIN said that a great deal depended on the object of the exercise. Most scientific societies, if they wished to undertake publication or disseminate certain information, wished this to be done as widely and cheaply as possible. If co-operation with the publishing houses would achieve this when it would not otherwise be achieved, there was perhaps some scope for it. But there had to be safeguards. As soon as one went into the commercial field it must be accepted that profits came in. If, taking that into account, it was still the best way of disseminating information, that was all right. But the scientific society must keep close control of scientific content and take a close interest in what was going on.

MR. STERN (Tate & Lyle) observed that as far as he knew there was no suitable abstracting journal for biology, and in particular botany. He believed the Russians did not abstract botany but tended to include it with biology. There was nothing comparable with the international exchange of journals of abstracting in the fields of chemistry, physics and other subjects. Was anything going to be done about that problem?

DR. MARTIN replied that the International Union of Biological Sciences was making a review of abstracting in that whole field, but he did not hold out any immediate hopes of any striking developments. He was not himself sufficiently familiar with the content of *Biological Abstracts* to know whether they met the speaker's point, but he gathered they did not.

MR. R. A. FAIRTHORNE (Royal Aircraft Establishment) said that one of the earliest and certainly most valuable services of the Royal Society related to presentation and the use of English. He wished people would accept their advice and use everyday words for everyday things.

He asked whether the Royal Society were looking explicitly into the use of composing typewriters, mathematical composition by the four-line and monotype methods and so on, or were just holding a benevolent watching brief. It was of enormous importance to be able to use machine composition.

DR. MARTIN said the Royal Society were not going into this in a very positive and direct way. They knew these things were going on. Their only direct interest was to try to use the Varityper for mathematical composition as much as possible. They had tried to encourage their printers, the Cambridge University Press, to investigate the methods mentioned.

MR. AGARD EVANS (Ministry of Works) asked what Dr. Martin had against commercial publishers. They had produced some excellent work in the whole realm of literature and art, and everything else. Why should not they have a free hand to go ahead with science? Frankly, he did not think modern societies were suitable media for safeguarding the transmission of technological work which was done admirably by the commercial press and could not be done by existing societies.

DR. MARTIN said he did not want in any way to belittle the commercial publishers: they had done tremendous service. What he was really referring to was what the scientific societies could do better than anyone else; namely, the submission of original work, sifting it and presenting it. If one took a firm grip, one need not run to commercial organizations for help in publishing. The scientific societies certainly had the know-how of correcting papers and printing them and issuing them as the primary journals of original work. The commercial press had done an enormous service in the secondary stage, but there was beginning to appear a tendency for them to want to take over the whole job and charge higher prices for the result. This was not healthy.

The CHAIRMAN said that the commercial publisher, with his established distribution and advertising machinery, could probably handle sales more efficiently than a society. It was true that the society knew its specialized market best, but the extent to which marginal sales could be developed largely governed the degree of economic success of a specialized publication. Was there not a parallel problem in regard to abstracting? He believed that the only possibility of running an abstracting service economically was to centralize production and distribution of abstracts in all scientific subjects, utilizing small specialist groups for the preparation of the abstracts themselves. Had the Royal Society ever considered this possibility?

DR. MARTIN said the Royal Society had not given this serious consideration in his time.

MR. BELL (Royal Aircraft Establishment) asked what were the views of the Royal Society on the suggestion put forward by Professor Bernal at the 1948 Conference for the avoidance of duplication in scientific journals.

DR. MARTIN said Professor Bernal withdrew his scheme at the Conference. It was that papers and not journals should be ordered and there should be a sorting arrangement whereby papers of particular specialist interest could be called for easily. It was attractive in many ways On the other hand, both the Physical Society and the Chemical Society had introduced the making available of single papers on request and both had abandoned it. It had been adopted in the Royal Society and Fellows could call for single papers if they wished to have them. He did not think there would be a rapid switch from the standardized journal production though there might be a slight movement in that direction.

MR. J. BIRD (Aslib) said that Professor Bernal's point was surely not that societies should produce offprints but that these should be produced in borderline fields. To be really successful such a scheme would require to be carried out on a centralized basis. In the archæological field the Council for British Archæology ran a system in which most of the local societies co-operated whereby information was made available to non-members.

MR. MURPHY (*Manchester Guardian*) said he did not think societies could compete with commercial publishers on advertising, which covered a good deal of the cost of printing. Surely it was better, therefore, to call them in with their knowledge of the market and their financial backing from advertisements.

DR. MARTIN said that it was true that they could incorporate advertisements, but many societies could and did do that also. Many societies made a real success of publishing and the Royal Society itself had published without help from advertisers and the price of its publications compared very favourably with those of the commercial houses. It could be done if the will was there.

THE DELTA CARD

BY DR. TH. P. LOOSJES

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THE Delta punched card is of the Batten-Cordonnier type which in American publications is called 'Peek-a-Boo'. This card is a simple device for the analysis of the contents of a growing collection of scientific literature covering a special well-defined area of research. It is recommended in cases where a scientific research worker, or a small group of workers, needs a thorough analysis of the relevant subject from several independent aspects at one time. Further possible applications of this card are the analysis of a collection of research data, the analysis of statistical data, or of material in archives.

Advantages of the usual edge-notched card compared with the card index

If the analysis of a publication includes four subject-headings A, B, C and D, and all combinations and permutations for a card index are to be made, twenty-four cards would be necessary. In practice it would be quite exceptional if all these twenty-four cards were actually produced; in most cases a selection, consciously or unconsciously, would be made. With the punched card only one card per title is necessary.

Advantages of cards of the Batten-Cordonnier type compared with the usual edge-notched card

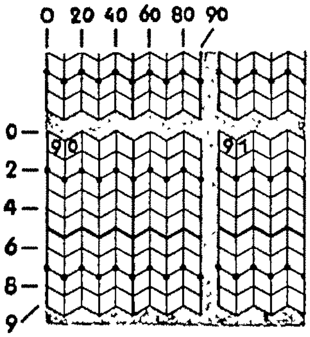
With edge-notched cards a new card is added for each publication, so that there is no restriction on the number of publications that can be covered. There is less freedom as regards subjects though a number of fields on this type of card may be assigned to certain subjects and certain fields may be kept in reserve. With the Batten-Cordonnier card the number of publications that can be analysed is limited but there is no restriction on the choice of subject headings, since for each new subject heading a new card can be added to the system. This means that the Batten-Cordonnier card gives freedom where it is most needed by the scientist; the dynamics of scientific research can be followed easily and immediately by this most versatile device. Each change in the main field of interest, or unforeseen developments of initially less important sidelines, can be covered by this means. No pre-assignment of special fields in the cards restricts the analysis of research as it develops.

Advantages of the Delta card compared with the other Batten-Cordonnier cards

1. The Delta card is designed for 10,000 publications. For larger collections a second set has to be made. (Cards of a different colour can be used.)
2. By the substitution of a lozenge pattern for the usual square design on the cards a reduction of 16 per cent. of card surface is attained.
3. The punching is no longer on little preprinted circles or squares but is on

the intersection of lines. The punching machine is fitted with a directive needle to facilitate the work.

4. All precision instruments are superfluous although the card has 10,000 numbers.
5. The reading of the card is simplified by such devices as: the difference between odd and even (horizontal); the heavier ruling of the '5' lines (horizontal and vertical); the manner by which the '2' and '7' lines (vertical) are distinguished by points; and the design of the card in 100 compartments instead of rows 1–100 along the sides.



A section (full size) of the Delta card, which measures 32 × 23 5 *cm.*

Finally, for quick and easy location, and replacement after the cards have been consulted, the synoptic system of Mr. Lampel is suggested. For subject headings the Uniterm system could be used. Further supplementary information may be had from the author.

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All the above items may be borrowed from Aslib Library, except for those marked with an asterisk. These are mostly available for consultation in the Library, apart from a few for which locations in other libraries can be given by the Librarian.

ASLIB CALENDAR

SEPTEMBER

WEDNESDAY 18th. Winter meeting.

MONDAY 23rd–FRIDAY 27th. Junior Introductory Course to information work.

OCTOBER

MONDAY 21st. Winter meeting

THURSDAY 24th–FRIDAY 25th. Northern Branch conference at Chester. see paragraph below.

NOVEMBER

TUESDAY 12th. Winter meeting, subject to confirmation.

Northern Branch

Activities planned for this year include a coach outing to the Lake District for members and their friends in June. Detailed arrangements will be supplied by the Branch Secretary.

A conference will be held on 24th and 25th October in Chester. The speakers will be J. G. McPeake, F.L.A., Chester City Librarian; L. J. B. Mote, F.I.L., A.M.INST.PET., Head of Technical Information Section, Thornton Research Centre, Shell Research, Ltd.; and V. Biske, B.SC., LL.B., F.R.I.C., F.INST.PET., Information Officer, Lobitos Oilfields, Ltd. Further details of the conference will be published later.

The Branch hopes to arrange evening meetings for members in Lancashire and Cheshire similar to those held by the Manchester and District Discussion Group.

Any member who is interested in the organization of meetings in the Newcastle area is asked to get in touch with Miss R. Aicher, Thomas Hedley & Co., Ltd., City Road, Newcastle-on-Tyne, 1.

Midlands Branch

A joint meeting with the Presentation of Technical Information Midland Group, was held on 14th March at the Birmingham College of Technology. The subject was 'Technical presentation as it affects the information officer' and views were expressed by a speaker from each Association. K. Boodson, Division Librarian, Imperial Chemical Industries, Ltd., Metals Division, opened the meeting on behalf of the information officer. He criticised the general level of technical writing, giving instances of poor style, grammatical errors, and the indiscriminate use of shop-floor jargon which was incomprehensible to the uninitiated. P. D. Patterson, a technical writer from the Dunlop Rubber Co., Ltd., replied for the P.T.I. He stated that technical writers were on the whole aware of these shortcomings and were making every effort to improve the standard of technical articles. He felt that professional societies for technical writers, on the lines of those already existing in America, might usefully be established in England for further investigation of these problems.

ASLIB INFORMATION

The Annual General Meeting was held on 27th March at the Birmingham Exchange and Engineering Centre. L. T. Oldaker, Information Officer, Tube Investments, Ltd., resigned the chair after serving a total of five years on the Committee in various offices. K. W. Humphreys, B.LITT., M.A., University of Birmingham was elected in his place. Other officers elected are: Vice-chairman, H. H. Goom, Information Officer; Honorary Secretary, B. H. Vickery; both of G.K.N. Group Research Laboratory; and Honorary Treasurer, B. M. Bland, B.COM., Deputy Librarian, University of Birmingham.

The meeting was followed by a cocktail party attended by 21 members of the Branch.

Chemical and Fuel and Power Groups

The Annual General Meeting of the Chemical Group was held on 27th February 1957. After the general business, Ronald Staveley, B.A., F.L.A., Lecturer in librarianship at University College, London, presented a paper on 'The reader, the writer, and copyright law'. Many questions were put to the lecturer, who cleared up a number of points relating to this complex subject.

On 25th April, members of the Fuel and Power Group joined the Chemical Group for an informal discussion about the proposal that Aslib should establish a register of information officers. The Chemical Group had previously circulated a questionnaire on this subject. Many points of view were expressed and the Chairman, R. G. Griffin, said that he would attend the Annual General Meeting at Scarborough when this proposition was to be discussed and, as a result of the opinions expressed both at this meeting and in reply to the questionnaire, would be able to present the views of members of the Chemical Group.

Research Sub-committee

A Research sub-committee of the Information and Library Committee has now been set up, under the chairmanship of C. W. Cleverdon, College of Aeronautics. Its object is to work out a programme of research into library and information work, to be carried out as resources become available. Members who are doing research work of this nature, or who wish to suggest subjects for inclusion in the programme, are invited to send full details to Aslib.

Society of Indexers

At a meeting held at the National Book League on 30th March a Society of Indexers was constituted. The objects of the Society are to improve the standard of indexing and to secure some measure of uniformity in its technique, to set up a panel of indexers from which authors and publishers can be furnished with suitable names on application, to act as advisers to publishers and editors on the qualifications and remuneration of indexers, to communicate from time to time papers and notes on the subject of indexing and to safeguard the interest of indexers. A council and honorary officers were elected and an annual subscription of two guineas was suggested. A draft constitution and rules were referred to the Council for further consideration. The meeting was well attended and included not only book indexers but also librarians, archivists, and persons engaged in office indexing. Members who are interested should write to: G. Norman Knight, M.A., Society of Indexers, 4 Fitzroy Street, London, W.1.

F.I.D. *Manual on document reproduction and selection*

Chapter 7, 'Selection', of the *Manual on document reproduction and selection* published by the Federation Internationale de Documentation has now been sent to subscribers. This completes the work, apart from the annual supplements to bring it up to date, and a third binder has been issued to hold it. It is mostly concerned with currently available systems; chiefly those using punched cards, but there is a small section on the more advanced techniques such as photographic and electronic selectors. As in the previous sections details of available equipment supplied by the manufacturers are given. A new feature is that the text is printed in German, as well as French and English. Any members who have subscribed to this work and have not received this part should get in touch with the Federation Internationale de Documentation, 6 Willem Witsenplein, The Hague, Netherlands, and not with Aslib.

U.D.C. Abridged English edition

The second abridged English edition of the *Universal Decimal Classification* (B.S. 1000A : 1957) is now available, price 2 guineas from British Standards Institution. It has been extensively revised and material from the *Extensions and Corrections* has been incorporated. The index has been greatly expanded but still has many faults and does not bear comparison with that of the German edition or the 14th edition of Dewey. A welcome feature is that it is bound in stout boards and will stand up to wear better than the previous edition.

Select List of Standard British Scientific and Technical Books

The fifth edition of the *Select List* is expected to be ready by the time this issue of *Aslib Proceedings* is distributed. It is edited by L. J. Anthony, F.L.A. and is a select list of the best books on science and technology published in Great Britain and the Commonwealth. It has been compiled with the objects of helping individuals and organizations in this country and abroad to assemble a representative collection of such books, and of guiding specialists who wish to know of standard British books in subject fields other than their own.

Since the fourth edition was published only five years ago, the development of science and technology has been so rapid that many of the books then listed are already out of date. The period since 1952 is particularly notable for the many revised editions of books first published before, during, and shortly after the war, many of which have long been out of print.

The present edition has been completely revised and enlarged with new sections on photography, veterinary medicine and industrial organization. As in the earlier editions, the bibliography is limited to books in print, with the exception of a few older standard works which have been included in order to obtain adequate subject representation. The entries are arranged in order of the Universal Decimal Classification and an alphabetical index to specific subjects is provided. The majority of the entries relate to books issued by commercial publishers, but Government publications, monographs and publications of scientific and technical societies and institutions have been included if they contain important contributions to the subject. There are more than 1,200 entries and the price is 8*s*. 6*d*. to members and 10*s*. to non-members.

Standards for Punched Cards

The British Standards Institution has set up a committee to consider the standardization of punched cards and punched tape. It is representative of both the manufacturers and the users of punched card equipment and Aslib is represented on it. Three subcommittees have been set up to begin drafting standards. Subcommittee 1 will concern itself with the physical dimensions of punched cards, the dimensions of the holes and the quality of cards. Subcommittee 2 will be working chiefly in the interests of users and will be concerned with questions of coding and layout. Subcommittee 3 will be concerned with punched tape and reels and containers for it. The aim of all these committees is to ensure that blank cards or paper supplied by any firm should fit any machine.

Miss I. M. Shrigley

Miss I. M. Shrigley, M.A., has retired after more than 26 years as librarian to the Institute of Bankers, during which time she has built up for the Institute a library which is probably unique of its kind. Miss Shrigley was Honorary Treasurer of Aslib from 1945 to 1949, Honorary Secretary in 1944 and before that a member of Council. She now proposes to devote a good deal of her time to the work of the Business Archives Council.

MEMBERS' ADVERTISEMENTS

Atomic Energy Research Establishment, Harwell, requires a JUNIOR LIBRARY ASSISTANT. Applicants should have four subjects G.C.E. ('o' level) including English Language and Mathematics or a Science; or equivalent. The successful candidate will be encouraged to take the Examinations of the Library Association (for which five (or four if one is at Advanced level) G.C.E. subjects are required, including English Language). Salary (Male). £305 (at 16) rising to £640. (Female): £305 (at 16) rising to £588.

Send POST CARD for further details and an application form, which must be returned by 26th May, 1957, to the Group Recruitment Officer, A.E.R.E., Harwell, Didcot, Berks, quoting 773/205.

Situations vacant

LIBRARIAN required by the Weapons Research Division of A. V. Roe & Co. Ltd., Woodford, Cheshire, to take charge of expanding technical library in the Guided Missile Field. Applicants (age 30–45) should be professionally qualified librarians and have had experience in technical library work. Preference will be given to those possessing a degree in addition to library qualifications.

Applications, which will be treated in confidence, should include a full statement of qualifications and experience and be addressed to The Chief Engineer, A. V. Roe & Co Ltd., Weapons Research Division, Woodford, Cheshire.

MATHEMATICAL TRANSLATION. Translators of Russian or of Polish are sought to translate into English elementary mathematical material (not significantly beyond the calculus level) originally written in Russian or Polish Fee to be arranged. Write to William H. Meyer, 415 Eckhart Hall, University of Chicago, Chicago 37, Illinois, U.S.A. When writing, indicate competence in both language and mathematics.

PATENTS TECHNICAL ASSISTANT REQUIRED to collect, classify and distribute patent and design data on light electro-mechanical products manufactured by a large engineering Company with world-wide interests, also to maintain the department's own patent records and eventually assist on patent work. Applicants should be aged between 25 and 35, have scientific or engineering training, and searching or other patent experience. A knowledge of German or French would be an advantage. Salary £650–£750 according to age and qualifications. Write stating age, qualifications and experience to Employment Officer, Hoover, Ltd., Perivale, Greenford, Middlesex.

SENIOR ASSISTANT required in Library of large research laboratory Duties include the cataloguing of reports and pamphlets, enquiries, etc Special library experience desirable Excellent working conditions in pleasant country area, canteen facilities; Pension and Life Assurance Scheme in operation. Apply Personnel Officer, Aluminium Laboratories Limited, Banbury, Oxon.

For sale

Parliamentary Debates (Hansard) House of Commons. Vols. 136, 140, 141, 146, 147, 159, 160, 163–173, 186–189, 191, 192, 194, 417–471, 483–544 (1921–1956). Box 4, Aslib, 4 Palace Gate, London, W.8.

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A Message from the President

I AM highly gratified by my election as President of Aslib. And this for two main reasons: first, because I have long been profoundly impressed by the contribution which Aslib and its members have made towards the formulation and the solution of the problems which face library service; second, because, after a succession of distinguished scientists and industrialists, you have selected a librarian to fill this most important position.

I take this departure from the established practice of the last few years to be of real significance at this time. It is true to say that the documentation needs of science and industry are well understood—largely through the efforts of Aslib. What is not yet clear, however, is how we are to meet these needs as fully as they ought to be met. We seem for a long time to have been on the threshold of a new kind of library service, but the difficulties of providing the kind of service which modern library users require are indeed formidable. I think that at last, as a result of much careful thought, we are beginning to understand the real nature of these difficulties, and I look forward now to a period of constructive thought, when we can find how to bring new techniques into the service of documentation. I hope that significant developments will take place during my period of office.

F. C. FRANCIS
Keeper
Department of Printed Books
British Museum

30th May 1957

ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 9 **June 1957** **Number 6**

THE RECORDS REQUIREMENTS OF INDUSTRY

BY H. R. MATHYS

Director, Courtaulds, Limited

Conference on Business Records, London, 27th March, 1957

THE ideal top executive keeps his desk clear. Any letters or other material appearing on it are dealt with at once and removed by a secretary. Any special papers required are brought promptly on the push of a button or at a spoken request into a loud-speaking telephone.

Even if all top executives do not quite live up to this ideal, probably they seldom stop to think where the paper comes from and where it goes to, and in particular where and how it is kept in between times. Occasionally a chit has to be signed authorizing one more filing cabinet, and that is that. However, to the best-run business the time may come when further thought is essential.

A few years back a carefully planned programme of demolition and rebuilding of a bombed factory site came to a stop. I was called on to decide what should be done with the contents of a cellar fifty yards long and nearly as wide. The bombs had made the building useless, all plant had been salvaged, and the site abandoned. Officially there was nothing in the cellar. Inspection showed rows of shelves stacked high with files, boxes, books, samples, bits of machinery, and bundles of all kinds. Quietly, managers of departments in surrounding offices and laboratories had staked a claim in the cellar and had had shelves erected, and then cleared their own working areas. They had an easy conscience as nothing of value had been thrown away. Now that the cellar was to disappear it was impossible for them to take back these records unless they were allocated additional space, which was not available. Further, in the course of years several departments with records in the cellar had lost their identity due to reorganization. Two other particular difficulties were a collection of prototype machines and some twenty-five sealed packing cases of special records distributed to places of safety during the war and since brought back.

What should be done with this vast collection? What indeed should be done with many other collections which subsequently came to light in other parts of the organization?

It has been this sort of experience which makes me welcome this conference today and the opportunity to state some of the problems of industrial records, in the earnest hope some help will be forthcoming.

Industry is the business of obtaining raw materials, making them into a saleable product, and selling that product.

The smallest industrial unit is the gipsy collecting his raw material from the hedgerows, making it into pegs, and then selling the pegs in the local market. At the other end is the giant international organization drawing raw material from its own forests, making pegs automatically in mechanized factories, and selling the pegs through a world-wide sales organization; it has numerous subsidiaries here and overseas; it has arrangements and agreements with other companies; and it has diverse interests extending far beyond the manufacture and selling of pegs.

In between there are a multitude of businesses of different sizes and types, some in the process of growth through the small workshop, the factory, the group of factories, to the giant; others which have been founded at the outset on a substantial scale.

The gipsy builds up memories in his own mind as to the best sources of sticks, the best way of making the pegs, the best market, and the cash he can expect. As he prospers and employs his family he can pass on these memories by word of mouth, but when he gets beyond his own family he finds it necessary to record some of these memories. He keeps a few samples of the sticks, a few samples of his pegs, and laboriously in an exercise book he notes cash received and paid out. He has then started to make and to keep records to aid his own memory and to give information to others. As his business expands, the records will increase in volume and nature, at first slowly, then more quickly, and in time at an alarming rate.

When his business has grown to giant size he will find, as chairman of International Pegs, Ltd., that his organization is producing literally tons of records daily.

All over the world people will be writing, typing, duplicating, printing, rubber stamping and punching. They will be doing so in books, on forms, on writing paper, on special cards, on labels, on posters and other surfaces.

Special groups will be photographing and microfilming the records previously made. Yet other special groups will be making indexes, summaries and digests of the original records, the filmed records, and even of indexes, summaries and digests.

Throughout the organization departmental heads and managers will be haunted by the demands for more cupboards, more shelves, more filing cabinets, more and more space to house the records; and equally haunted by the fear that, should they order the destruction of any early records, immediately an inquiry will come which only those records could have answered.

Why must such a volume of records be made?

The answer in part can be found by following the three main factors of industrial life: acquiring raw materials, making something, selling it.

First take the factor of *Acquiring raw materials*.

In the smallest units the raw materials can be ordered verbally and paid for in cash, the only record being a simple bill and an entry in the petty cash book.

With a business of quite modest size records will be required for: forecasts of what is wanted, and where; lists of suppliers; tenders sent to suppliers; long-term agreements; import licences; forward buying of foreign exchange; formal orders made out in sextuplicate or some similar number: (*i*) for the supplier, (*ii*) for the factory, (*iii*) for the purchasing officer's own files, (*iv*) for the cost accountant, (*v*) for the main accountant, (*vi*) for the statistician; progress chasing; formal confirmation of goods received, also in sextuplicate; cheques in payment; formal confirmation of payment made; receipt from supplier.

There will be many kinds of raw materials wanted. There will be correspondence on visits to suppliers, visits from suppliers, alterations in orders, insurance problems, claims, and many other matters.

The purchasing officer will need staff to help him and there will be staff records.

One thing is quite certain, that as the business grows the increase in the volume of records made in acquiring raw materials goes up far more rapidly than by a simple arithmetical progression. The same is found in all parts of the business. It is salutory to ponder on how many pieces of paper came into being as a result of each one of us attending this conference!

The second factor is making something—that is, *Production*.

In the small unit the raw material is received, worked on and dispatched by men operating on verbal instructions.

As the unit grows there will be the following at least: Receiving Depot records; Stores inventories and issuing notes; blue-prints, instruction manuals, etc., for the production staff; inspection records; machinery maintenance records; Stock-room records; Dispatch-room records.

At some stage production will be reinforced by a research and development unit, producing its own written records and samples, prototype machines, etc., which it holds as records for further reference. The records of research units can be incredibly bulky and complex, and in time will call for a special library and information bureau.

Growing size of production will also bring into being numerous further departments: labour, safety, cost analysis, work study, apprentice schemes, canteens, surgeries, sports clubs. Each of these departments adds its own quota of records, and the more departments there are the more information has to be passed from one to the other, calling for more and more paper.

The third factor is *Sales*.

A man with an order book, and an invoice clerk soon grow into a sales organization calling for: orders made out in sextuplicate; sales planning; advertising and promotion; sales agreements of all kinds; statisticians; trademarks; negotiations with home and overseas Governments; numerous other matters increasing in number and complexity with the growth of the business and all producing more and more records, including probably a library of cinema films and sound records.

With the growth of purchasing, production and sales there is an inevitable growth in accountancy and administration.

Simple ledgers for accounting are soon supplemented. Special forms, cards and sheets get more and more numerous. Simple calculating machines appear, soon to be overshadowed by machines of ever-increasing complexity requiring more and more punched cards or equivalent devices.

Administration likewise soon grows from the 'boss's office' aided by the local solicitor. Legal and formal documents increase in number and call for a legal department and an archivist. Shareholding needs a registrar's department with many people and machines dealing solely with share transfers and the payment of dividends. It is here one can find cupboards full of metal addressing slips.

Recruiting, personnel, investments, Government relations, tariffs and quotas, economics, and many other matters, all call for specialists and eventually whole departments, all producing records and all calling for more and more information from the records of each other and from other parts of the organization.

Finally the boards and committees. Each member must have his own 'papers'. These are so often the summaries of other records, or even summaries of summaries. Each member must have his copy of the minutes. Perhaps nowhere else can one see more clearly the multiplication of paper records. The bigger the organization the more boards and committees and the more members on each, and the more often individual members find it essential to duplicate some of the committee papers and spread them around to keep non-members informed, particularly when a member represents the company on one or more of the numerous committees of Aslib, N.U.M., trade associations, research associations, professional and other bodies.

Personally I believe the length of individual letters, memoranda and reports could and must be drastically curtailed to the general benefit, but until we have devised some new way of keeping information and of passing it on to others I see no hope of a material reduction in total numbers of letters, memoranda, forms, etc.

Whatever may happen in the future, we shall still have the problem of the records already made.

Above are some of the reasons how and why the records of industry are made. The next question is how long must they be held?

Records are kept for three main reasons. First, to answer day-to-day inquiries. Second, to answer routine and regular inquiries. Third, to answer special and in the main unpredictable inquiries.

First of all the *day-to-day inquiries*.

Orders for raw materials must be kept for reference until the materials have arrived, proved suitable, and been paid for.

Production instructions must be held until the goods have been made.

Invoices for the outgoing goods must be kept until the goods are accepted and paid for.

Incoming letters and copies of outgoing letters must be held until the subject has been dealt with.

Every department can set some time limit, often merely a matter of weeks or months and at the most a year or so, when the record has served the purpose for which it was made, so one can well ask: 'Can they then be thrown away?' The answer is, 'Not all, as *routine and regular inquiries* have to be met'.

Information is required over a matter of several years for ascertaining the reliability of supplies of raw materials, for costing and ensuring efficiency in the factories, for trends of demand and the spread of sales, for accountancy purposes, and for tax inspectors.

The purchasing officer, the factory manager, the salesman, the accountant can all set time limits of, say, some years (at most seven years) during which some records must be kept to answer these routine and regular inquiries.

So: 'Can all the records be thrown away at this stage?' The answer, unfortunately, is 'Not necessarily'. Most of them will never be referred to again, but some of them will be required to answer special inquiries. The difficulty is that we do not know which items are those we may one day wish to look at again.

This group of *Special and unpredictable inquiries* is so varied that it is best to indicate the nature of these inquiries by a series of examples.

Let us take *legal* matters generally. At any time inquiries may be made regarding legal title to land and buildings, formal agreements of all kinds, annual accounts, articles of association, board minutes, and similar documents. One can see readily a group of records, mainly in the form of legal and other formal documents, which every industrial business must keep in safe custody for indefinite periods. Even in the biggest organization the legal and formal documents themselves are of manageable numbers; but more and more one realizes the necessity of holding in addition, and indefinitely, records showing what led to the legal and formal documents being made and what happened as a result of them. When written, these legal and formal documents are doubtless clear in meaning to all concerned, but people and conditions change and questions arise calling for an up-to-date interpretation of the written word:

> What was behind that rather complex agreement determining the payments for a continuing but irregular supply of raw material, and how has it been implemented in the course of years?
>
> What was the technical field in which exchanges were to be made in a process which has now altered out of all recognition, and how were the various changes dealt with between the date of the original agreement and the present day?
>
> What exactly was the land area in mind when the exclusive sales agreement was made for, say, India or French Indo-China?

Contemporary correspondence and memoranda can be of immense help and often lead to a satisfactory and friendly settlement instead of an acrimonious dispute and possibly litigation.

To find this correspondence and memoranda it may be necessary to examine records in the purchasing department, in the factory, in sales and in many other places. It would be relatively simple if it were known at the time that certain invoices and other mundane documents were being written not only for their immediate purpose but as vital evidence for use some years ahead. These particular documents would be put aside. But so far we have no way of identifying, out of tens of thousands, the very few which may constitute a vital record for use later.

Another example is the record wanted for the purpose of *Patents*. By patents the Crown grants limited periods of monopoly, and hence favourable conditions which encourage industry to put money and effort into developing new inventions and so help to build up yet further the industry of the country. The system works well but it calls for answers to many questions, by the owner of the patent and by others, as to what was and what was not done commercially at certain times. Reliable records of production and sales are essential to meet such questions as:

> When was this or that article first made and sold commercially?
> When was this particular process carried out commercially?
> Which of several alternatives was actually used ten, twenty, or more years ago?

Months, even days, may be of considerable financial importance. They may even determine whether a new factory can or cannot be built. Experience shows that the human memory can be most unreliable in such cases, and as often as not the man who really did know has died or is otherwise unavailable. Proof must be found in the records.

Trade-marks are another example. To many industrial companies maintaining the goodwill in their trade-marks is of paramount importance. Matters may run smoothly for very many years and then there is an act of deliberate piracy or of honest conflict when the trade-mark owners must prove conclusively—often to a court—how, when and where they used the trade-mark; what were their commercial arrangements, particularly with subsidiaries, associates and sales agencies; what steps they have taken to preserve their rights. It is impossible to foresee the circumstances which will provoke these inquiries, and therefore to pinpoint the particular records which should be preserved.

Technical research and development can provoke special inquiries, such as why certain inventions and developments were adopted as soon as made and others only after the lapse of many years, or not at all. Sometimes the answer is technical, but often the answer was commercial and lies in the records of the sales department, or in the personal records of individuals who at that time controlled the investment policy of the company.

A further example of these special and unpredictable inquiries is a *Company's relations with its associate companies and subsidiaries,* particularly those overseas. Inquiries often call for reliable records going back many years. As an example, a long-standing technical exchange agreement with an overseas company can continue smoothly and fruitfully for very many years and then run unexpectedly into a storm due, for instance, to nationalization, anti-trust action, mergers, or a forced sale of shares. Technical, commercial and administrative records, all must be searched to find the answers if the company is to avoid expensive losses.

There is a further example, of particular interest to archivists—*The history of the company.* The writing of the original history may not call for delving too deeply, as most company histories show miraculous growth due to the dynamic character of the founder, to some fortunate inspiration of the technical man of the day, to a cavalier decision to buy up a rival without reading the balance sheet, and all these stories make good reading. Experience, however, shows that something more than one dynamic man or one dramatic act is required to cause major changes, and the inquiring mind hankers after more evidence of what was happening at the time, and so the somewhat superficial investigation made for what one might term a popular history leads to far more searching inquiries into the surrounding circumstances, in the hope that useful lessons can be learnt from the experience of the past.

Another type of inquiry is prompted by the *Economists and the other highly qualified experts*. With appropriate and adequate figures and statistics these experts can produce reports of far-reaching significance. It is imperative, however, that the initial information should be adequate and be firmly based. There may be divergent views in industry on the value of the reports of these experts, but a study of reports of, for example, the National Institute of Economic and Social Research, London, shows that industry has provided funds for most abstruse inquiries, and it becomes increasingly difficult for the board of any company to ignore the possibilities and to order the destruction of records which may be the only source from which the necessary raw material for these experts can be found and possibly valuable guidance given for the future prosperity of the company.

One can go on for a long time giving examples of these unpredictable inquiries. They can arise from such matters as *Long-service awards to staff and workpeople* and *Pension schemes*, with the apparently endless problems of broken service and movement between one company of the group and another; from the activities of perhaps the Anglers Co-operative in relation to *River pollution*; from *Town planning*, from *Nationalization of mining and power*. Time and again it is the simple, mundane, but cumulatively incredibly bulky records which contain the answers and in some way or another help the company.

As a final example I would mention *Inquiry by the Monopolies Commission*. This is a possibility for any industrial organization which supplies one-third or more of the market, however it has conducted its business.

The inquiries so far have been most searching and called for thousands of man-hours devoted to finding answers on all aspects of the company's business. Dare a company already liable to inquiry, or one which may be liable later, dispose of any records which might conceivably have some bearing if its turn for inquiry ever comes?

A summary of the position is therefore: Industry consists of, (*a*) acquiring raw materials, (*b*) making a saleable product, (*c*) selling the product.

The smallest business has some records of its bills for raw materials, of its manufacturing know-how, its invoices for sales, and its general accounts.

The physical bulk of these records increases with the increase in the size of the business, not by simple arithmetical progression but by geometric or some more frightening progression.

Most of these records have served their initial purpose in weeks or months, and the remainder in a matter of a few years, but some small but unidentifiable number of them may be of vital importance to answer special but unpredictable inquiries in the course of years.

Whatever the size of the business, its continued growth must be assumed, and the bigger it grows the greater the number of special and unpredictable inquiries that will come and the more important they will be, so that a small business must be reluctant to destroy apparently unimportant records, as they may become of major importance when it has grown much larger.

Any bill, any record of production, any invoice, any sample may be of importance in the future, and its retention and production at the critical time worth a great deal of money.

Prudence says, therefore: 'Keep the lot', but sooner or later the bulk is unmanageable, even if foolscap and quarto are reduced to microfilm, as it is never easy to locate one invoice or one letter amongst a million, whatever its size and however able one's archivist, unless one knows in advance which one may want to find, and that industry certainly does not.

Thus we see the dilemma of industry: To keep records costs money. To destroy records costs money.

To keep records costs money in space, in archivists, and all the paraphernalia of microfilms, indexes and records of records.

To destroy records as soon as they have served their initial purpose may mean the irretrievable loss of vital evidence and so cost money.

An answer must be found, and any help this conference can give will be welcome indeed.

DISCUSSION

SIR RAYMOND STREAT, K.B.E., Chairman of the Cotton Board and President of Aslib, presided at the morning session.

The PRESIDENT, in throwing the subject open to discussion, said that Mr. Mathys had brought very clearly to the minds of those present the special problems of industry in regard to records handling all the time and the distinct possibility that it was not an academic question but was, in fact, a question which might really involve the due discharge of the obligations of a company to its shareholders in respect of the properties held by the company on behalf of the shareholders and the proper stewardship thereof. The more efficient and intelligent the contributions made by archivists and librarians to systems of indexing and guides for industry, the more efficient would be the service which industry could derive from its records.

MR. JOHNSON (British Transport Commission) asked whether it would not be a good idea in connection with records keeping to inaugurate within departments a system of regular weeding. If it were determined that at certain intervals all files were to be weeded, the task, although still great, would be nothing like as great as it would be if the weeding were left for a longer period.

MR. MATHYS said that it was certainly right to contemplate weeding. His firm had given instructions to all departmental managers to weed, but the managers came back with many difficult questions. One problem was that the only person who could weed properly was a very senior member of the staff, because only he was likely to have the experience and knowledge to determine what was likely to be a weed and what was a flower. That indicated the basic problem. Weeding must be done, and he agreed with Mr. Johnson that it must be done regularly

MR. ROSS suggested that there were two aspects to the problem of records keeping. Dealing with outside records was admittedly difficult, but surely a very much more vigorous start could be made on internal records. It seemed to him, by and large, that the internal record could be tackled as soon as it had done its job. Surely that was a case where really active weeding or erasing was called for.

MR. MATHYS said that Mr. Ross was suggesting the flame-gun method. His firm had a lot of places bombed during the war, and hoped that that would have done that very thing. He had mentioned, however, that one result of the bombing was that numerous records were immediately duplicated or triplicated and sent to other places for safe keeping. That now presented a big problem. They did not know for certain whether they could throw away the cases because duplicate records were kept somewhere else, or whether they must have someone to go through them—and it would be a long job for a senior person to sort them out. There was, however, a point in suggesting that erasing might be one answer to the problem.

Mr. Maurice (National Union of Manufacturers) said that the question of weeding reminded him of the fact that a year or two previously he had had a botanist staying with him. He had asked the botanist whether some plants were weeds or not, and the botanist had replied that it all depended on whether he wanted the plants to grow there or not.

It seemed to him that the status of the person who was looking after the records or doing the filing, particularly in a small firm, needed consideration. More often than not such people were not specially qualified for the job; they were usually called filing clerks and followed a system already laid down for them. It might be more appropriate to give them higher status and to call them records officers.

Many business executives could waste up to 50 per cent. of their time looking for documents or information which ought to be readily at hand through filing systems or records. The person responsible for records keeping should be someone with the capacity to discriminate, but too often the type of person employed had no idea which of the documents or records were important.

Turning to the question of reducing the volume of records, Mr. Maurice wondered whether it would not be worth the effort needed to transfer information from original documents to some form of secondary document or card. Correspondence with suppliers could be very bulky. If a few cards were used, information could be given as to how much was bought of a commodity, the price and the terms—which would make the main file unnecessary.

There was an important distinction between management records, which were purely internal running records, and records which were of historical interest to a firm. It was not necessary to keep for years and years all exchanges of correspondence between the staff on the question of salaries and conditions. A single record of such things should be made. Legal and formal documents also could easily be summarized.

Mr. Fox (John Lewis Partners) said that the reference by Mr. Mathys to the very small percentage of items which were ultimately likely to be needed prompted him to ask whether they ought not to be prepared to go to a great deal of expense and trouble to use every available means, photographic and otherwise, of condensing records from their full form, for it was a great advantage to be able to secure the space which the records occupied in their original form.

Mr. Wilson Reid (University of Glasgow) said that in condensing records by photographic means one should be wary of trusting too much to the long life of photographic materials. He had spent a year on and off in rephotographing photographs which had now faded. It seemed a pity to burn one's boats completely and irrevocably.

Mr. Cole (Acheson Colloids) said that part of the complication of keeping records was that too many copies of the same record were sometimes kept. He suggested that one of all series of copies should be starred, and then when weeding took place the unstarred copies could be dispensed with and the starred copies retained.

BUSINESS RECORDS AND THE ARCHIVIST

BY RUPERT C. JARVIS, F.S.A., F.R.HIST.S.

Society of Archivists

Conference on Business Records, London, 27th March, 1957

I HAVE no doubt we have all heard of the schoolboy who received full marks for an essay that consisted of one single word. The point is, he scored full marks for accuracy as well as for brevity. The subject of the essay was 'Snakes in Ireland', and the essay consisted of the one word—'None'.

I cannot help thinking that many of my archivist colleagues, and particularly those in the County Record Offices, would score full marks for any essay they might write on 'Business Records'.

There are now many record offices up and down the country; some of them are governmental (central or local), while others are quite independent; some are ecclesiastical, some lay, and some mixed; some are academic in foundation or affiliation, others not; some are narrowly specialist, while others are widely general. Let us glance for a moment at the scope of the holdings of a characteristic record office with a wide catchment area, namely a typical county record office. It holds not only the administrative and judicial records of the county at large but often enough of the city borough and civil parish also. There is usually a long run of quarter sessions records, often enough going back in unbroken succession for some centuries. There are also the records of the lieutenancy, the shrievalty and the coroners' courts. There are usually some ecclesiastical holdings, diocesan, capitular and parochial, and sometimes the surviving records of one of the old religious houses. Altogether apart from various continuing series, there are the records of specific occasions, such as the tithe award, the statutorily deposited plan, the enclosure and the disputed election. Then there are the records of the now defunct administrations and extinguished jurisdictions, such as the turnpike trusts, the poor-law unions, the courts of sewers, and certain of the extinct charities. Apart from these records in general of the county, there is usually a separate category, known as 'deposited records', consisting mostly of muniments of title, records of estate management, manorial records (including court rolls), records of the local nobility and county gentry, family affairs, literary references, and so forth.

Thus, when a researcher approaches an archivist—modest handmaiden to research—looking for records as his raw material, if the researcher is working in the field (shall we say) of history or genealogy, the archivist is usually able to produce from his great collection something or other by way of the material sought, and often enough the specific document required. If, however, the researcher is working in the field (shall we say) of economics, sociology or statistics, and comes to the archivist in search of *business* records, the answer has mostly to take the form of 'Snakes in Ireland', and although the archivist thus qualifies to receive full marks from the school-teacher for the accuracy and brevity of his answer, he gets no marks at all from the researcher for all the help he has been.

I think that part of the difficulty about business records and research is that when the average business man thinks of research with the aid of records he thinks of some jejune anecdotal piece of antiquarianism on the one hand, or some heavy or arid historical thesis on the other—with nothing in between—and nothing in any case that can have any practical bearing on present-day business, or on anything else for that matter.

The fact is, however, that a good deal of this anecdotal narrative military and political history has been outmoded long since. Released from the worry about who buried whom in the dead of night or how thick was the thin red line, historians have for some time now been busy rewriting and reinterpreting history in terms of its impact upon the ordinary man—and that includes the ordinary business man. This is precisely the reason why researchers are casting round for new source material. They are working on the present also, as well as the past, working on (shall we say) market research, job analysis, factory group-payments, bonus schemes, efficiency incentives, sick-absence analyses,* and so forth.

I leave the distinguished scholars who follow me to convince you not only of the practical value of this sort of research but also of its practical value to the ordinary business man. I, for my part, propose to take all that for granted, and to speak rather as a practising archivist about the practical issues regarding the selection and preservation of business records.

Before I go any further, I should like to define the term 'business records' in the sense in which we are using it today. Business records are the records that have been created in the ordinary course of business, and have been retained in the business for business reference by those who created them.

You may say, 'Naturally! What else?'

I want, however, to contrast this idea of an integrated body of business records, each separate item of which is necessarily related in a particular way to every other item, with the notion of an artificially collected agglomeration of documents chancing to refer to some particular topic. Earlier this year the University of Wyoming announced† that they are collecting historical documents concerning the ranch-cattle industry of western America, and appealed for any letters, account books, photographs or journals that might be found among British family papers. Whatever might come of an appeal of that nature,‡ the resulting agglomeration of documents—*pièces isolées*, mere *disjecta*, each piece alienated from its own archival context—will lack, for the research worker, the essential characteristics of an archive of business records.

What I have to say about our sort of business records can be, like all Gaul, divided in three parts. First, there are the business records that—like you—are still in the business. Second, there are those that are old enough—long since retired, superannuated and forgotten—to have become 'historical'. And third, having talked that much about snakes, we come back to old Ireland, the place where they are not, the record offices.

My first topic, then, is current business records. If I speak now about those business records that are still in the office fulfilling a business function, I am aware that I shall be straying—trespassing—into the field of office management. I am aware, furthermore, that it would be foolish of me (to say nothing about being ill-mannered) to presume to teach a business man his business. To those whose special interest is office management, therefore, I would say: You are interested in a particular *process*. I am interested in the *end-product* of that process. At least we have that in common.

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* See, for example, *Health in industry* (London Transport Executive, 1956).

† *The Times*, 22nd January, 1957.

‡ This sort of record collecting zeal (for example, of Jeremy Belknap, Roulhac Hamilton and Lyman Draper) has been a special feature of a particular school in the United States (*Proceedings*, American Philosophical Society, vol. 98, 1954, pp. 172–3).

I dare say that you, too, know the case of the business man—he may, of course, be quite exceptional—who loudly proclaims that he finds himself so cluttered up with such a mass of records that for reasons of mere space, and the sheer compulsion of necessity, he absolutely *must* destroy them; furthermore, he is so busy with immediately current affairs that he can spare no time and no staff to scrutinize them before they are carted off as waste paper. As a business man, he has no time either to listen to any erudite disquisition on the subject of 'Business records as the raw material of research'. Business records, he says, are not merely a by-product, an off-fall in a more important process; they are an effluent that must be discharged—and discharged before they stifle the business.

Dare I say here that all archival experience goes to show that what needs investigation in a business situation of that sort is not the *records*. It is the *business*. In other words, it is all a matter of office management. The office should work out a more efficient 'drill', a drill whereby the whole body of records is systematically sorted and sieved, weeded and wasted, pruned and purged, canalized and funnelled in such a way that it never gets thus seriously out of hand.

By reference to what general principle, then, can records be reduced? I should be less than frank if I did not admit that those usually good friends the archivist and the researcher do not always see eye to eye on this particular problem. Sufficient it is for me to say here that those who speak with most authority in the camp where my tent is pitched hold that the only criterion by which to judge which business records should be preserved and which should be destroyed is the criterion: Which business records are the most valuable *to the business*? We might ask ourselves: Which particular body of records contains that higher 'know-how', from which alone a business could be reconstructed or maintained if the whole of the directive and higher executive were, at one fell swoop, removed? It is that body of records that, ideally, the archivist would wish to see preserved.

I admit, however, that there are other criteria.

The practical question we have to ask ourselves, however, is: By what method can the whole mass of a business's records be reduced to that lesser compass? The merits of more than one method have been canvassed. Microphotography has been held to be a practical solution to all these problems. It has, however, been just as convincingly argued it is not. On the general issue the report of a governmental committee, the *Report of the Committee on Departmental Records*,* makes very interesting reading.

We might, however, discuss here at least one method. Bear with me, therefore, while I state a commonplace: any particular business records, like most other forms of record, might be viewed as falling within one of three stages.

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* *The Grigg report*, Cmd. 9163.

Those of the first stage are in some form or other current office books or papers, filed or otherwise retained in the office for current office business. Those of the second stage are no longer required so immediately to hand; they have been transferred to some store room, records room, or similar repository where they are held available for more important perhaps, but certainly less frequent, reference; those of the third stage have come to be no longer of any practical use to the business that created them; they have become, in the more usually accepted sense, 'historical' records.

Record experience goes to show that successful record management can most easily be based upon the recognition of these three 'stages'. The aim is to work out a drill whereby records in any one of the stages are systematically reduced to the smallest quantity at the earliest moment, consistent with general efficiency; and if they pass on to the next stage, that they pass on, not to be now forgotten but under a continuing control according to a preconceived plan.

For example, all documents of only transitory use, e.g. advices later displaced by acknowledgments, packing notes later displaced by invoices, cheques after reconciliation, chèque-book and paying-in counterfoils after a stipulated period, internal correspondence and branch-to-branch memoranda, office compilations of information duplicated elsewhere, minor accounting records, minor staffing records, all petty-cash documents, less important drafts, and so forth—the list will, of course, vary with each particular concern—might be destroyed at the earliest convenient time, but in any case while the papers are still in what we have called 'the first stage', that is, while they are still 'office papers', filed or stored in the office itself.

The office documents that survive this first purge, to pass on into what has been called the second stage, should (in so far as they can) be scheduled for disposal, according to a planned programme: unsuccessful tenders, documents statutorily preserved for a stipulated period (e.g. import invoices retained as evidence of dutiable value), all documents retained solely on account of the statute of limitations, contracts during their currency, certain arbitration proceedings, personnel agreements, particular instance papers supporting board's decisions, certain correspondence with shareholders, particular accounting records not in the main series, and so on. These various descriptions of records could be scheduled in an order in which they are ultimately to be destroyed, otherwise disposed of, or further reconsidered: this description, two years; that description, three years; the other, four years; yet another, five years, and so on.

Business records of this character, after they have ceased to be immediately current, are usually moved out of the filing cabinets or out of the office rooms themselves, into a store room or records room. When this is so, they could conveniently be shelved or stored in the order in which they will become ripe for scheduled disposal or reconsideration. A little ingenuity could arrange the scheme of space and shelving in such a way—I have seen 'second-stage record rooms' so arranged—that the space to be occupied by the accessions, under the schedule, to the records room at any particular period, is the space that was just vacated by the disposals under the schedule for the same or the immediately preceding period.

Some at least, however, of these 'second-stage' records, even after the operation of the disposal schedule, will always appear, quite probably, too important to the business to be destroyed: minutes* of the board of directors, negotiations for concessions abroad, patent agreements, judgments and proceedings in leading cases, confidential negotiations for amalgamations, agreements on divisions of markets, the major series of account books, the register of inscribed stock, and so forth.

These are the records I have referred to as the basic records of the business, the records from which alone, if need be, the essential features of the business could be reconstructed. Even these records, however, may very well with the mere passage of time pass into the third stage, namely records that have been retained so long—on the purely business issue—that they have now become what the man in the street calls 'historical'.

The advantage of some scheme of record management such as that outlined above is that the records are regularly controlled at certain specific stages—and that therefore they never get out of control. The *accumulation* never builds itself up. The records are a controlled by-product, not a stifling effluent. From the point of view of office management, for the saving in the rent alone of floor space for filing or storage accommodation, some such scheme is well worth while. From the archivist's point of view the advantage is that the records are, over the years, sieved and sifted, canalized and funnelled in such a way that the end-product is a set of records, kept down to manageable proportions, objectively selected solely by reference to their importance to the business. Their authenticity—and indeed their impartiality—has not been impaired by someone selecting this one or rejecting that one, as 'important to history' (whatever he thought to be 'history'), or 'of significance to economics' (whatever he thought to be 'economics').

I ought to confess that it is at this point that researchers often complain where archivists do not. We know that the researchers of the past—even of the recent past—did not know what we would consider significant (for purposes of research) today. We may therefore be certain that we do not know today what the researchers will consider significant in the future. Where, therefore, research interests are emergent—the hare is started up only in the course of the chase—how can we know the nature of what we have already destroyed? A number of answers have been suggested, random sampling, for example, or preserving by blind selection in certain classes, e.g. each tenth or twentieth year. In archive-keeping in the State repositories we think we have the answer.† As to what the answer is in the matter of business records, I am only asking the question!

I come now to my second topic: the older business records. As I have already said, very few bodies of business records in this category have found their way to the various record repositories. Nevertheless, I am concerned not to exaggerate. I know, for example, that the University of Manchester—pioneers in this field, of course—have done some good work on the Boulton and Watt records (now broken up into no less than three repositories), and those of Samuel

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* The difficulty of classifying any of these items is illustrated by the fact that whereas, for example, Dr. W. H. Chaloner finds minute books most informative (*Journal of Documentation*, vol. 4, 1948, p. 10), Professor R. M. Hower finds them almost useless (Address, Economic History Association, New York, 28th December, 1940).

† For example, specimen forms (in a mint state and otherwise) are kept in respect of destroyed classes.

Oldknow, and Hermann Falk, the founder of the Salt Union. The records of the Hudson's Bay Company are well cared for and accessible for researchers in their own archive, some even now being microfilmed *in extenso* in order that research may more conveniently proceed in Montreal and Toronto as well as in London. The business records of the old railway companies and canal and navigation companies are in a record repository of their own—a model of its kind. The business records of Sir William Turner, London merchant-tailor and Lord Mayor (1615–92)—cash books, sales books, merchandise books, letter books, journals, stock accounts—are in the London Guildhall, as are also the premium registers of the Royal Exchange Assurance Company. Certain early records of the Manchester Ship Canal Company have made their way—by a curious route—to the Lancashire County Record Office at Preston. Certain records of early mining companies are in the County Record Office at Stafford. The records of the Metropolitan Brick and Tile Co. of Irthlingborough are in the Northamptonshire Record Office. In the University of London the London School of Economics is doing good work, and in Northern Ireland the Public Record Office, Belfast. All this, however, is like the wandering minstrel and Hamlet's uncle—a matter of shreds and patches.

The business records, for example, that inspired the pioneer business history* in this country were not regularly produced by an archivist but by a piece of almost inconceivable good fortune, namely the action of an adventurous boy scout. The story has been told before but will well repay repeating in this context.

In Mellor, a little village in the Peak District—incidentally near where I used to live some years ago—a lad had some old eighteenth-century weavers' pay tickets he was disposing of in the way of curios. It turned out that he had come across them when the boy scouts were making use of one end of a ruinous outhouse in Mellor, the other end of which was used as a stable. It did not take long for the news of an eighteenth-century business document being bandied about—such is their rarity—to reach the ears of Professor George Unwin, of Manchester, who found that this dilapidated stable had been an outhouse of the Mellor cotton mill of Samuel Oldknow, one-time partner of one of the Richard Arkwrights. Professor Unwin found not only Oldknow's cotton mill, built in the 1790s, but also in the loft of this old outhouse, under several inches of dust and debris, the business records of the mill (heaps of pay tickets, wages sheets, weavers' ledgers, warping-books, canal permits, costing books, account books, and correspondence), and found, furthermore, the business records of a number of Oldknow's other business ventures, his earlier muslin factory in Stockport, for example, and his bleach and print works in Heaton Mersey.† It has been said‡ that the mere list of the records found there is a perfect statement of the original sources necessary for a business history of the final period of the domestic system and the early factory age. Anyway, Professor Unwin was able, by the entirely fortuitous discovery by a boy scout, to modify in important respects the accepted ideas about the transition from the domestic to the factory system in the cotton trade.

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* No. 1 in the University of Manchester Economic History series.

† G. Unwin, *Samuel Oldknow and the Arkwrights* (Manchester, 1924), p. v.

‡ Dr. M. Plant, *Journal of Documentation*, vol 6, 1950, p. 100.

Those particular business records, which turned out to be of such immense importance to research, survived probably solely because they chanced to have been overlooked in some dilapidated ruinous unoccupied abandoned premises in a now remote Peakland village. Had they been in some office store room, cellar or attic, at any business address in Stockport, Manchester or London (or anywhere else, for that matter), they would almost certainly have been cleared out and destroyed long before; or had they survived that length, they would surely have been surrendered to one of the salvage drives in one war or the other.

As an archivist, therefore, I plead for the rescue of all business records—however apparently trivial—more than a hundred years old. Do not be mistaken upon this issue. Age of itself confers no particular virtue, character, honour or distinction upon records. *Old* business records are not necessarily, on account of their mere age, any more valuable than *new* business records—but they are certainly more *rare*; and it is because research is now being handicapped by so much having been lost in the past that we really ought not by oversight, ignorance, error or otherwise to lose any more.

It would be possible for me to itemize here various categories and descriptions of records which ought, in the opinion of the record interests, always to be preserved. I could say, for example, any maps or plans earlier than about 1830; any systematic lists of names earlier than about 1850 for whatever purpose originally compiled; any comprehensive or detailed references to early colonial trade; any regularly kept series of early minute books or account books in the main series; and so on, and so on.

Why plans and maps before 1830?

Because the earliest complete Ordnance Survey on the large scale had not been completed by then, and hence earlier maps or plans may contain features not elsewhere recorded.

Why lists of names before 1850?

Because the compulsory registration of births, marriages and deaths was introduced only in 1836, and hence the lists may contain genealogical clues not elsewhere obtainable.

Why early colonial trade?

Because the loss by fire of the early colonial (log cabin) Custom Houses has already robbed us of records on the other side.

In other words, there are very good reasons, of a varying nature, why certain descriptions or special categories of records have become important, rare, or otherwise valued. It is unnecessary, beyond demonstrating the fact, to go into any great detail here, for detailed lists have already been prepared by the British Records Association.* These lists divide old records into three classes: (1) documents that should always be preserved; (2) documents that should always be considered for preservation; and (3) documents that could safely be destroyed. Fortunately, these lists have been republished in leaflet form, and are available from the Association free of charge.

There are certain other classes of record that might warrant permanent preservation in their entirety, however unimportant—or even trivial—their contents might appear to the inexpert eye. The reason for this might seem

* As to which, see below.

somewhat difficult to explain to anyone not in close touch with the methods of modern research.

One of the principal qualities of record evidence is that it is impartial, unprejudiced and unbiased in relation to the particular issues that were not in mind when the records themselves were first created. To the researcher, therefore, records often owe their importance to certain secondary characteristics rather than to their primary, and usually owe their peculiar value as evidence to the fact that their preservation was settled by mere chance in relation to this secondary feature, or at least the records were not *selected* for preservation by reference to someone's conception of their particular evidential value. For example, the accounts of the Crown Audit Office (now in the Public Record Office) are studied now not to verify that some payment or other was in fact duly made by the Crown; but to ascertain the (disputed) date of one of Shakespeare's plays,* a point that was never in mind when the document concerned was originally written or later preserved—hence its peculiar value now as evidence. The unbalanced accounts of the malt-tax collectors provide evidence bearing upon the behaviour of Bonnie Prince Charlie's invading army in the rising of 1745.† Or again, just recently certain special features of infection and contagion, in particular relation to measles, typhus and bubonic plague, have been discussed‡ from the text of Thucydides' history§ of the Archidamian War—431–21 B.C. The point here is that you or I might have a bias or a prejudice about smoking and throat cancer; but Thucydides can be relied upon to have been unbiased when he recorded the symptoms of typhus, because he did not know that what he was recording were symptoms of any sort.

The archivist, therefore, can only plead with the business man not to destroy wantonly what others would set a great value upon. That value may not be a *monetary* value—but man cannot live by cash alone. How then—and where—ought business records of that character to be preserved?

Whatever else may be disputed about records, I do not think you will hear it denied that the best place to keep them is where they historically belong—subject, however, to certain conditions. These conditions are, at least, that their continued physical well-being is assured; that their existence is known to researchers; and that reasonable access is granted for purposes of research. Detailed consideration of these conditions I shall have to leave to Professor Sayers and Professor Simmons to discuss. If the records are to be disposed of, for example, on the grounds that they are no longer absolutely essential to the business, but the space they occupy is, an important social duty rests upon the business not to destroy records of this character without first obtaining the (free) advice of the record interests concerned, and that brings me to my last topic: a brief and cursory review of the record set-up in this country.

Because there are certain differences between England, Scotland, Ireland and Wales, I shall confine myself in the main to England. The Public Record Office in Chancery Lane keeps the *State* records, and is therefore not (as such) directly concerned with our business records. Functioning from the Public

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* (Sir) H. Jenkinson, *Manual of archive administration* (1922), p. 10.

† *Transactions*, Lancashire and Cheshire Antiquarian Society, vol. 59, 1947, pp. 131–54.

‡ A. W. Gomme, *A historical commentary on Thucydides*, 1956, vol. 2, pp. 145–62, and 3, p. 726.

§ *History*, II, 45–54, and III, 87.

Record Office, however, is the National Register of Archives (a special branch of the Historical Manuscripts Commission—founded in 1945), whose primary function is, with the aid of many willing local helpers, to register, and later to protect and preserve, all those manuscript sources (including business records) that are needed not only by historians but also by economists, sociologists, statisticians and indeed all inquirers seeking information in any field. The service to scholarship rendered by the National Register of Archives is quite beyond assessment, and the unfailing patience, help and courtesy of the staff in Chancery Lane is beyond all praise.

The British Records Association (founded in 1932) is a voluntary association of individuals and corporate bodies, drawn from all the varied interests concerned, whose chief aim is the preservation of all the documents essential to the use of present and future researchers, and particularly those records at present in private hands. Out of its own funds the British Records Association maintains a small expert staff in the City (in the Charterhouse) whose primary task is the expert examination of any records threatened with destruction, the rescue of those worthy of rescue, and the placing of worthy specimens or collections in the most appropriate repository. Because of a generous grant from the Pilgrim Trust, the British Records Association is currently undertaking, for example, a project in the City in special relation to deposits of records in solicitors' offices, a project that has proved one of great magnitude. Here, again, everyone who has had much to do with records will agree that it is impossible to overpraise the work that has been done by the British Records Association, or the staff who have done it.

The special interests of the Council for the Preservation of Business Records (founded in 1934) can best be left to Professor Sayers. It is only necessary for me to add that these various bodies, together with the repositories themselves—national, local, ecclesiastical, academic and private—work in close and happy co-operation.

As regards the various record offices where records worthy of permanent preservation may be finally deposited, I take it I need to say nothing here about the places of national deposit or the universities, such as the British Museum, the Bodleian, John Ryland's at Manchester, the London School of Economics, and so on. Our principal concern will, presumably, be with the local record offices.

It is broadly true now to say that practically every county in this country has a county record office, whose function it is to preserve the records of the country. The precise organization differs from county to county. In Essex, for example, it is not the Essex *County* Record Office, but the *Essex* Record Office, because it holds the records of the ecclesiastical diocese as well as of the administrative county. In East Suffolk and West Suffolk there are associations between the administrative counties and the county borough of Ipswich and the borough of Bury St. Edmunds respectively; in Sussex there is an association between the two counties and the diocese of Chichester; and in Lincoln between the three counties (or 'parts'), the city and the diocese. In London we have a happy understanding between the City of London at the Guildhall, the London County Council at County Hall, the City of Westminster, and such record-conscious metropolitan boroughs as Marylebone. Outside of London a number of cities and boroughs have their own record offices, Bristol, Bedford and Chester, for example; certain museums, such as Dorchester and Leicester; and certain libraries such as Norwich, Birmingham and Leeds. Occasionally units other than the county feel themselves free to cater regionally across county boundaries, as the Liverpool Record Office caters for the Mersey (both the Lancashire and the Cheshire sides), and Birmingham Library for the West Midlands generally, and Newcastle upon Tyne for Tyneside, both Northumberland and Durham. All this goes on in the very happiest liaison between the various authorities concerned.

When therefore any business man finds himself in need of any help or advice on the matter of the preservation or destruction of any of his otherwise unwanted records, I feel sure that the archivist in the local county, or town hall, or library or museum, would be pleased to help with expert opinion, or advise him where more expert opinion could be obtained.

DISCUSSION

MR. R. IRWIN-CARRUTHERS (Metropolitan-Vickers) suggested that the most important records were the records of mistakes. The records of achievements were contained in the balance sheet. He suggested that the mechanics of records keeping could be left to any system which the shareholders could afford to pay for.

MR. NEWMAN (de la Rue) said that his great difficulty was the question of who was to decide on the destruction of records. He found that there was a conflict between sales and factory as to what was important and what was not.

Recently he was passing the firm's incinerator and, fortunately, he spotted some books, which he stopped to examine. The factory did not think that the books were of any consequence, but they were printing records going back over hundreds of years and of vital interest to collectors. If he had not passed by they would all have been burned. Where was one to draw the line in an organization of that nature with so many divisions? It was physically impossible for one man to weed all the records.

MR. A. SIMON (Arthur Guinness, Son & Co , Ltd.) suggested that those present might care to express views on the desirability of centralizing the keeping of records, files and so on. In theory, centralization was said to be a good thing, but in practice it seemed to break down. From what he had heard that morning, the answer seemed to be a combination of the two.

The PRESIDENT asked Mr. Mathys to say a few words on the subject of centralization or decentralization in a big business, because it was an important point.

MR. MATHYS said that the greatest exponents of centralizing were probably the civil servants, and they had many arguments in its favour. In industry there was much violent dispute as to whether files should be kept centrally or not. The main argument advanced against was that in a large organization with many people with different functions a number would want the same file at the same time, and delays would inevitably result and business be lost.

Centralizing within a department was clearly desirable. His organization had gone a stage further with certain types of records. There were certain basic records and documents which had to go to the secretary, and it was the secretary's responsibility to look after them. Certain other records had to go to the patents department, including documents about inventions and agreements, and the patents department had the responsibility for looking after those. There was, therefore, a definite place where one could go to ask the sort of questions which would arise. If someone had in his files a document of which a copy was held by the secretary or the patents department, the document could be sent to the appropriate department and it was then the responsibility of that department to hold it or to get rid of it.

However, one was still left with shelves and shelves of sales records which could not be put in any company central office. In the case of many firms these days sales records were growing at the rate of several feet a day along the shelves

MR. JARVIS said that, with regard to the merits or demerits of centralized registries for records purposes, it would be impertinent of him to say that he agreed with Mr. Mathys when he said that that was one of the main principles of organization in great Government Ministries. That was, of course, so. Every month the Treasury issued a magazine devoted to organization and methods, and the magazine was called *O and M*. It might be of interest to Mr. Simon to know that in the February 1957 issue of that magazine one of the Treasury's top-ranking officials on organization and method had referred to the subject of the merits or otherwise of centralized registries. There the matter was discussed in a very informative way, and there were what seemed to him to be some pregnant suggestions with regard to the limits to which that kind of centralized, common service registry could be taken with particular reference to records.

MR. LAMPRILL (Materials Handling Equipment (Great Britain), Ltd.) said that it seemed to him that, having decided which bits of material were to be kept, the question whether certain correspondence was reliable and an accurate reflection of fact should be considered. Some might have been written from a business man's point of view, with his tongue in his cheek.

The PRESIDENT asked Mr. Lamprill whether he meant that documents might deceive one because the writer might have been a funny man with his own idea of life and pursuing his own whimsy.

MR. LAMPRILL said he meant not necessarily that but that one person's way of looking at documents might differ from any other person's way of looking at them.

Another important factor was the effect of the telephone. When going through one's records gaps were generally to be found and they could probably be explained by the fact that a lot of telephone conversations had taken place and nobody had ever bothered to record them.

MR. VAN DYK (Royal Dutch Shell) said that during the last seven or eight years courses on industrial and business records handling had been run in Holland. When they began the courses they had the idea that the world of the professional archivist and the world of the company executive were quite separate and would never meet, but from their experience in building up their courses they had come to the conclusion that each could gain from the other and that many of the main principles which had been found to be valid for the old archives were also very important in organizing the keeping of current records, for they could enable one to make decisions about retention and disposal at a much earlier date and on a better basis. There was now a growing understanding between professional archivists and those engaged in business records keeping in Holland.

In every big organization there was bound to be multiplication of documents. From that point of view, a central registry was very important. There one should build up a staff which would not keep on changing but would remain there and do the job for years and years. Such a staff could give a priority grading to correspondence, and that would make weeding much easier, because weeding was very inefficient and very expensive if it had to be done on the basis of a decision in respect of every document. By such a means a decision could quickly be taken about large blocks of documents or records.

MR. BROADBENT (Carrier Engineering Company Limited) said that reference had been made to the difficulty of distinguishing between a weed and a flower. He would recommend the use of a colour. If one could decide when initiating records or writing or compiling original correspondence how long the records were to be kept the colour of the carbon copy could be predetermined so that after an interval a junior could be given the task of tearing up what was unimportant.

In the case of his firm's contract filing system they had already decided that they would keep copies of orders from suppliers and correspondence with clients and reports about the success of the work, and the flimsy copies were all in key colours. Consequently, a junior could go through a file and tear out all the correspondence which was not of the required colour. It was a self-determining system.

MR. JARVIS said that, however effective might be the method of determining weeds by colour for certain types of businesses, some allowance had to be made for factors which became important only during the passage of time, and it was difficult to see how those issues originally arose and how they grew to the importance that they later came to assume. He felt that if colour was the only criterion one would inevitably destroy all the evidence about the emergent features merely because they could not at an earlier stage be identified as later assuming importance. That was a very real danger in the matter of records.

Mr. Jarvis recommended the *Report of the Committee on Departmental Records* (Cmd. 9163), usually referred to as the Reid Report. It cost only 3*s*. It contained interesting information on the subject of weeding and identifying at an early stage which features were important and which were not.

MR. DE MATLEY (British Institute of Management) said he had been interested to hear Mr. Mathys speak about sales documents taking up space on shelves at the rate of several feet a day. That certainly happened. However, there was a national industrial organization which, twenty-four hours after it had received an order from a customer, had destroyed that order and also the only copy of the invoice remaining in its possession. It merely had an image of those two documents on microfilm, and it claimed that it could find them in the files as quickly as it could have found the original documents.

MR. WILLOUGHBY (British Road Services) said that his organization employed 40,000 people and many records had to be kept, and so it was up against a problem. The records ranged from documents of title, which could not be destroyed, to purely ephemeral contracts of carriage and so on which were kept for six years in case queries arose and were then normally destroyed because it was impossible to afford the space for them. He would be interested to hear views on the point at which one might go in for microfilming records.

MR. MATHYS said that it was not merely a question of when to microfilm There was also the question of whether to microfilm at all.

There was the question of what the lawyers might think. Sooner or later in industry one was faced with problems about patents or agreements, and these could be very costly either way, either making a lot of money or losing a lot of money. In the end the matter was often determined by whether one could show that certain processes were carried out commercially on certain dates, whether one could find in the factory records that at a certain time something was done, and one then had to find a record of the particular group of stock that was made and find the record of its transport away from the factory and the sales record to link it with the manufacture. To link up what was done in the factory with what was sold was in itself a major problem They were told by the lawyers that to produce really cast-iron evidence in the court one had to have a running record. Everything had to be signed and initialled and in a certain form. That was all due to an Act of 1938 which dealt with evidence. He thought he was right in saying that it was still questionable whether a microfilm of a document was reliable evidence in court.

He had not answered the question as to when to microfilm, and all he could say was that it was one's own risk if there was any possibility of litigation.

SIR HILARY JENKINSON (British Records Association) asked whether there would be an opportunity to raise one or two large questions of policy with which his Association and also the National Register of Archives were concerned. He was not decrying the subject of weeding and other matters of detail which had been raised, but there were larger questions which he hoped might be raised after all the principal speakers, who represented four quite different points of view, had had their say.

The PRESIDENT said there would be a further opportunity for comments and questions at the end of the afternoon session, but if Sir Hilary had anything else to say at that moment he would be listened to with interest.

SIR HILARY said that all he wished to add at that moment was that there was one thing to be said about the business of weeding, and that was that where one found that one was dealing with too many records the answer to the problem was not to make them.

MR. MAURICE (National Union of Manufacturers), in moving a vote of thanks to Mr. Mathys and Mr. Jarvis, said that those present had had an extremely interesting morning. They had had Mr. Mathys on the one side representing industry and setting forth the reasons why industry needed to keep its records, and on the other side they had had Mr. Jarvis putting forward the point of view of the archivist and the reason why the archivist needed records and why research workers and others might want information for very different reasons from those which led industrialists to keep the records. He felt that both the industrialists and the archivists in the long run wanted largely the same thing.

The meeting might be looked upon as a point of departure, because he believed that it was one of the first occasions when industry, in any numbers, and archivists had got together to try to find a point at which they could establish their interests and decide whether to go ahead.

From the point of view of the archivist, he thought one could say that industry and business were becoming generally more and more conscious of the importance of good records keeping. It was by no means true that every business kept good records, but the rate at which people were becoming aware of the need for keeping good records in the interests of good management and general progress was becoming very rapid.

The vote of thanks was carried by acclamation.

The PRESIDENT said that he wished to offer from his own experience a conviction, which had grown stronger with every decade of his working life, that there was no such thing as perfection in the decisions that one had to take when dealing with business records. It was a perpetual problem. The conflict between mass and service would always be present.

He believed that a higher degree of attention to the problems of records at the top of the tree meant a great contribution to the efficiency of the enterprise, particularly in the matter of the training of the younger executives. If there was an attempt at the most intelligent available solution within any group, the young men entering the group had a better chance of acquiring a fundamental grasp of the activities of the group than if there was confusion and an abandonment of the problem, which happened in a great many human groups, whether they were business or anything else.

At an early stage in his career when he was at the head of an office he had had to give a ruling to his colleagues in relation to weeding. After many consultations with them and communings with his own soul, he gave his subordinates just three words by which to judge whether a document should be destroyed or not. If it showed evidence of why, how or what the concern did in any form, the document was worth keeping; if it did not have substantial evidence of why, how or what action was taken it could be destroyed. He did not say that that was perfect, for he had already said that it was his conviction that there was no such thing as perfection. Indeed, the problem represented a perpetual struggle.

He had a great feeling for the historical side which Mr. Jarvis had emphasized so much. There was little left to Britain but its maturity and skill. Maturity and skill were very much related It was from the labour of scholars on the material which was made available to them by contemporary decisions that this country would in the future derive the practical benefits from the country's greatest remaining asset, the maturity of our society.

Papers by Professor R. S. Sayers and Professor J. Simmons, which were presented at the afternoon session of the Conference, will be printed in the July 1957 issue of *Aslib Proceedings*.

MECHANICAL TRANSLATIONS

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Based on a lecture given at an Aslib Discussion Course
London, 19th and 20th February, 1957

INTRODUCTION

THE present paper is intended to form an introduction to the ideas of machine translation; it is in no sense a complete account of the work which has been carried out at Birkbeck College and elsewhere and which interested readers can study in more detail in a book[1] which is in course of publication.

First proposals for machine translation (MT) arose during discussions between the present author and Warren Weaver, which were held in 1947. These led to a small amount of practical investigation in England between 1948 and 1950 and, in particular, to some detailed proposals by Booth and Richens[2] for carrying out MT on standard punched-card machines. An actual trial of the method was conducted and this produced results of a satisfactory character considering the crudeness of the methods which were then employed. It is an unfortunate commentary on British scientific modesty that it was not thought worth publishing the experiments. This was left to an American group, some four years later, and the noise of their announcement is still reverberating in our ears!

The early nineteen fifties saw the first awakening of American interest in the field, and this, gathering momentum, led to a conference on MT which took place at the Massachusetts Institute of Technology in 1953. This conference was followed by the I.B.M.–Georgetown experiment, mentioned above, in which selected Russian sentences were rendered into English. Important work in the U.S.A. was conducted by Reifler,[3] who suggested pre- and post-editing, by Oswald and Fletcher,[4] who considered German syntax patterns, and by Harper,[5] who was concerned with Russian.

Work in England is being sponsored by the Nuffield Foundation, and the Birkbeck College group has been occupied, since 1955, in the preparation of actual programmes for translating one language into another. To avoid duplication of effort no attempt has been made to consider the 'popular' language—Russian. The first language to receive detailed examination was French, particularly in scientific contexts, and this has been followed, more recently, by German.

One of the major problems has been to do useful translation on our computor APEXC[6] and this has been solved by two devices: micro-glossaries and stem-ending procedures, together with a programme of engineering development to extend the storage capacity of the machine itself. Little need be said regarding machine development except to remark that it is hoped soon to have available space for 64,000 words. The linguistic work is carried out by assistants who, sometimes using the machine itself, analyse technical material for sentence structure and word content, and it is in this field that progress is most restricted. It may be well to point out that, even with its extended storage capacity, we do not consider that APEXC—or any other existing computor—will ever be used for economical machine translation. For this purpose special machines must eventually be constructed.

THE MECHANICAL DICTIONARY

In the early experiments the act of translation consisted merely of looking up words in a dictionary, and this was unsatisfactory for two reasons:

(*a*) Because normal dictionaries require that the user has a basic knowledge of the language.
(*b*) Because machine storage is limited.

The first of these problems was solved in the original proposals by Booth and Richens. Ordinary dictionaries contain singular forms of nouns, infinitives of verbs and so on. The machine dictionary, however, was constructed to contain only stems; that is, the longest portion of words common to all of their parts. Naturally certain words will require the storage of several different stems, but this involves no new principle and need not detain us. If it is assumed that alphabetic symbols are coded into numerical form by means of the simple scheme *a* → (00001) *b* → (00010) *c* → (00011) . . . *z* → (11010) where the groups of digits in parentheses are seen to represent, in binary form, the numbers 1, 2, 3 . . . 26, it is clear that in a dictionary words in alphabetical order become numbers in ascending order of numerical magnitude.

Thus the location of an unknown word requires only the selection of the largest dictionary entry which is wholly contained in it, which is either the word itself or the stem. When the stem has been located the translation is, in principle, possible. Practically, however, use is made of any remaining letters—the ending—in various ways. The simplest involves the use of an auxiliary ending dictionary which gives only general information of the type: 1.s.p. indicating first person singular, present tense. The more elaborate ending dictionary, as envisaged by Brandwood,[7] contains material which is added to the stem of any translation to produce a complete word or phrase. Thus:

amo—stem *am* ending *o*
stem translation—lov–
ending translation I–e
giving 'I love'.

In recent work stems, and sometimes endings, are accompanied by 'grammatical notes' which enable the machine to make an analysis of the overall sentence structure. This is particularly necessary when highly inflected languages like German, Latin and Greek are to be treated, because major word order changes are usually needed between source and target languages. Even in French information of this type is required for the inversion of noun-adjective order as in:

une équation différentielle → a differential equation,
1 2 3 1 3 2

and for the resolution of such structures as:

nous le leur donnons → we give it to them.
1 2 3 4 1 4 2 3

Enough has been said to make clear the essentials of stem-ending dictionary technique; it remains to remark that the procedure also effects a considerable saving in storage requirement. Thus M stems and N endings will require only $M + N$ storage locations but can give rise to $M.N$ different words.

The second limitation mentioned at the start of this section to some extent can be eliminated by the use of micro-glossaries, but it still reflects powerfully on the techniques of dictionary search which are available.

Thus the simplest method would be to store the translation of any word in that storage location whose position number corresponds to the code number of the foreign language word. For example:

$$et = (00101)\ (10100) = 180 \text{ in decimal scale,}$$

so that the translation:

$$(00001)\ (01110)\ (00100) = and$$

would be stored in position 180. Unfortunately, because storage is limited this simple scheme is impracticable since, even for words whose length does not exceed ten letters, $26^{10} \approx 1{\cdot}4 \times 10^{14}$ locations would be needed.

The second method involves the storage of dictionary entries, in ascending order of foreign language word magnitude, and in consecutive storage locations. Thus, for the example above the entry:

(00101) (10100)................(00001) (01110) (00100)
e *t* *a* *n* *d*

would appear. In the simplest look-up procedure the unknown word is subtracted from the dictionary entries in descending sequence from z. The result of the subtraction will be positive until the correct entry is reached and, at this point, will become zero or negative. Since computors have an instruction which enables such sign changes to be detected this process is quite feasible. Unfortunately, however, the average number of comparisons required to locate any word is $D/2$ where D is the number of words in the dictionary, and this, for a dictionary of even 1,000 words, would involve look-up times of about one minute on most machines.

The method finally adopted is that of bracketing.[8] Here the unknown word is first subtracted from that word in the middle of the dictionary. If the result is positive the unknown word is known to lie in the first half, if negative in the second. Assuming the latter case, a new subtraction is made on the word at $3D/4$ and in this way the location of the foreign language word is restricted either to $(D/2 - 3D/4)$ or $(3D/4 - D)$. It is easy to show that the word will be exactly located in about $\log_2 D$ comparisons. Thus, instead of the 500 comparisons required in the previous method, a dictionary of 1,000 entries can be examined in about ten operations, which require only one-fifth of a second on even slow machines.

Numerous variants of the bracketing process have been investigated, particularly those which make use of Zipf's law of word frequency, but it has been shown that none of these methods produces substantial improvements over the simple process.

IDIOMS AND AMBIGUITY

To conclude this brief exposition it is necessary to describe some of the methods which have been developed for the resolution of idioms and ambiguity.

Verbal idioms present no problems, except that of storage. The method is illustrated by considering the expressions:

boîte de nuit
boîte de savon

The dictionary entry for *boîte* contains an indication that the word may form the basis of an idiom, the translation is therefore stored and the next word examined. If this is *de* idiom is still possible and the translation is again held up. The next word is crucial, if it is *nuit* the latter word is accompanied by the special translation: nightclub for the idiomatic group; if it is some other word such as *savon* the non-idiomatic translations are output.

Ambiguity is resolved by two methods:

(*a*) The micro-glossary itself.
(*b*) Category counts.

The former is self-explanatory and depends upon the construction of dictionaries for specific subjects for which otherwise ambiguous words have been suitably restricted. The latter depends upon the insertion, with each ambiguous word in the dictionary, of a set of category numbers which refer to its possible meanings. Non-ambiguous words also bear a category number and the machine pre-processes the text in order to find out which category number(s) occur most frequently. This analysis is then used to select the appropriate meaning in cases of ambiguity.

This technique can, for example, resolve problems such as those posed by the sentences:

She cannot bear children
These men are revolting

in which the words 'bear' and 'revolting' are not translatable without more extensive context than that which is available within the sentences concerned.

THE FUTURE

Finally, it is worth mentioning that the speeds of operation at present feasible range from 3,000 words per hour for French to 1,000 words per hour for German. Since machine time costs about £20 per hour there is evidently no competition with human translators. In future, however, the speeds are likely to be increased by a factor of ten and the process may then become economical.

Much depends upon the construction of special translating machines and upon the provision of high-speed input and output equipment which can deal directly with the printed (or even spoken) word. Certainly languages such as Chinese and Arabic are unlikely to become amenable to treatment until such devices are to hand.

Even with these disadvantages, however, the progress to date is such that a central organization should complete the installation of a translating machine. Its strength would lie not in economics but in its ability to deal with many languages for which it is difficult to obtain skilled technical translators. The cost of installing the first machine should not exceed £100,000 and subsequent models might involve only one-tenth of this outlay.

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ASLIB INFORMATION

ASLIB CALENDAR

SEPTEMBER

WEDNESDAY 18th. Winter meeting.

MONDAY 23rd–FRIDAY 27th. Junior Introductory Course to information work.

OCTOBER

MONDAY 21st. Winter meeting

THURSDAY 24th–FRIDAY 25th. Northern Branch conference at Chester.

NOVEMBER

TUESDAY 12th. Winter meeting, subject to confirmation.

New President and Vice-President

Mr. F. C. Francis, M.A., F.S.A., Keeper, Department of Printed Books, British Museum, has been elected President of Aslib for the year 1957–58, in succession to Sir Raymond Streat. Mr. Francis has been a member of Council since 1952 and a Vice-President since 1954. He is also Chairman of the International Relations Committee, and a member of the Executive and Finance Committee and the *Journal of Documentation* Editorial Advisory Board.

Sir Wavell Wakefield, M.P., who was Chairman of the Parliamentary and Scientific Committee from 1952–55 and is the Director of a number of companies, has been elected Vice-President.

Aslib Council 1957–58

The following members were successful in the Council election which took place at the Annual General Meeting at Scarborough on 22nd May:

L. J. ANTHONY, Atomic Energy Research Establishment, Harwell
D. V. ARNOLD, Imperial Chemical Industries Limited Paints Division
W. ASHWORTH, British Nylon Spinners Ltd
MISS M. D. GAUNTLETT, Kodak Limited
R. G. GRIFFIN, The Chemical Society
R. N. LOCK, Birmingham College of Commerce
L. G. PATRICK, Aluminium Laboratories Ltd
J. B. REED, Department of Scientific and Industrial Research
R. C. WRIGHT, Individual member

International Study Conference on Classification for Information Retrieval

This conference was held from 13th to 17th May 1957, at Beatrice Webb House, Dorking, England, at the suggestion of the Federation Internationale de Documentation. It was organized by Aslib, as British national member of the F.I.D. Aslib was fortunate in securing the co-operation of the Classification Research Group, an independent group meeting in London, and the University of London School of Librarianship and Archives.

The object of the conference was the study of modern ideas on classification and their application to information retrieval. The following programme papers were presented:

'Classification as a discipline', by S. R. Ranganathan, formerly Professor of Library Science, University of Delhi. Co-rapporteur, FID/CA (Committee on the theory of classification).

'The use of classification in information retrieval', by Dean Jesse H. Shera, School of Library Science, Western Reserve University, Cleveland, Ohio.

'The classification of a subject field', by J. Mills, Department of Librarianship, North-Western Polytechnic, London, N.W.5.

'Relations between subject fields', by B. C. Vickery, Librarian, Imperial Chemical Industries Ltd. Akers Research Laboratories, Welwyn, Herts.

'Notation in classification', by E. J. Coates, Chief Subject Cataloguer, British National Bibliography, 7 Bedford Square, London, W.C.1.

'Classification and mechanical selection', by J. E. L. Farradane, Scientific Information Officer, Tate & Lyle Research Laboratories, Westerham Road, Keston, Kent.

'Contributions of classification to science', by Dr. Norman T. Ball, National Science Foundation, Washington, D.C. (read in his absence by Mr. W. A. Wildhack, U.S. National Bureau of Standards).

Of these, the theme papers and that by Ranganathan were published in *Classification Research Group Bulletin*, vol. 1, no. 2, April 1957, of which a few copies are still available from the Honorary Secretary of the Group, Mr. B. C. Vickery, ICI Akers Research Laboratories, The Frythe, Welwyn, Herts. It is hoped that all the programme papers will be published, either collectively in a single publication or in periodicals, but no decision has yet been made.

Other original papers presented at the Conference were: 'Classification terminologique et diffusion selecto' by Monsieur G. Cordonnier; 'Documentation in West Germany—its present stage with regard to mechanical selection', by Dr. M. Scheele; and 'Languages and classification' by Dr. Julian Smith. Copies of these may be obtained from the authors.

The Conference was limited to some forty invited experts, to ensure the best conditions for success. Representatives of France, Germany, India, Italy, the Netherlands, Unesco, the United Kingdom, and the United States took part. Other experts from some of these countries and Czechoslovakia, Denmark, Hungary and Norway, were unfortunately prevented at the last moment from attending.

The Conference was generally agreed to have been of great value to those taking part. After some difficulties over terminology, the meetings soon revealed that workers in different countries had been thinking along broadly similar lines. Monsieur Eric de Grolier, in a masterly 'Concluding Survey', summed up the work of the Conference and suggested lines of future work. Most of these, with others, were incorporated in the conclusions and recommendations which were adopted after a vigorous discussion. They have been widely distributed and will, it is hoped, be extensively publicised in library literature.

Northern Branch

On Monday 15th April a conference was held in association with the Brown Library, Liverpool Central Public Libraries. The occasion was part of the centenary celebrations of the laying of the foundation stone of the Brown Library. Dr. A. E. Stubbs spoke on 'Dissemination of the knowledge of Soviet scientific work in western countries'; and a paper by Mr. F. Crosdale on 'Using foreign literature in an information service' was read by Mrs. Robinson, Tootal Broadhurst Limited. It is hoped that both these papers will be published in a forthcoming issue of *Aslib Proceedings*.

Mr. Jacob Blukoo-Allotey of Ghana, Chairman of the International Students' Union at the University of Liverpool, opened the Liverpool International Library—the first in the world. Much of Liverpool's collection of books on foreign countries was destroyed by bombing in 1941 and replacement volumes have been stored for many years in tea-chests. Now the Liverpool International Library will offer open access to a million volumes on the languages, literature, travel, and history of foreign countries. For this purpose the former Picton Library, which is shaped like an amphitheatre, has been transformed. All the dingy tiers of seats have disappeared and bookcases, chairs, and tables in light oak and formica have replaced them. On this occasion there was also on view the Brown Library Centenary Exhibition.

Branch visits are being arranged to St. Deniols Library at Hawarden; De Havilland Aircraft Co. Ltd.; Stanlow Refinery of Shell Refining and Marketing Company; and Thornton Research Centre of Shell Research Ltd.

Fuel and Power Group

The 4th Annual General Meeting of the Group was held in April. Mr. F. Hickman, Ministry of Fuel and Power, was re-elected Chairman and Mr. H. C. Claxton, C. C. Wakefield & Co. Ltd., Honorary Secretary.

A small party visited the East Greenwich Gas Works on 3rd May and were shown the Producer Gas Plant, the Coke Ovens and the Water Gas Plant. Members were impressed by the economic organization demonstrated in the sale of waste and by-products such as clinker and germanium contained in a thick black sludge which was seen slowly dripping from the Producer Gas Plant. They were also surprised to see that besom brooms are still used for sweeping coal, as no modern equipment has yet proved so effective or economic. The works cover an area of 170 acres and the visit was arranged through the kindness of Mr. A. G. Higgins, Assistant Secretary of the Institution of Gas Engineers and Mr. B. C. Hinwood, the Station Engineer at East Greenwich.

Aslib Furniture Group

The independent Furniture Library Group, formed in January 1955 under the leadership of Mr. J. F. W. Bryon, Borough Librarian, Eccles, Lancs., has now become an Aslib Group. Mr. B. Agard Evans, Ministry of Works, has been elected Chairman and the Honorary Secretary is Mrs. Irene Wagner, Furniture Development Council, 2–4 Dalmeny Avenue, London, N.7.

The Group will continue its work on the co-operative provision of literature, interlending and information supply, access to business archives, and classification. A panel has been working for over a year with the British Standards Institution on the U.D.C. furniture schedules. A union list of periodicals and a list of bibliographies are being prepared and long-term plans include a bibliography of furniture books. The first public lecture took place on 15th April and will be followed by others.

Members who wish to join the Group should notify Aslib.

Copyright Act, 1956

The Copyright Act, 1956, came into force on 1st June 1957. Attention is drawn to Sections 7 and 15 of the Act and to the *Copyright (libraries) regulations*, 1957 (S.I. 1957 no. 868) which lay down the conditions under which certain classes of libraries may make photocopies without permission of the copyright owners. Both publications are available from H.M.S.O. price 3*s*. 6*d*. and 3*d*. respectively.

Professor Lancour

The Carnegie Corporation of New York has announced the appointment of Professor Harold Lancour, Associate Director of the University of Illinois Library School, to conduct a study of libraries in British West Africa. The survey will be carried out during October and November this year. Its purpose is to determine the state of development of library services in West Africa and to evaluate the immediate requirements for expansion. Professor Lancour has been a friend of Aslib for many years, and not long since he spent nearly a year in the United Kingdom.

Summer Seminars

The School of Library Science of Western Reserve University has announced two special summer seminars which should be of interest to people in documentation and information work. They are designed primarily for those who attended the Conference on the Practical Utilization of Recorded Knowledge held in 1956, but they are open to anyone interested in the subject. They will be held from 29th July to 2nd August and from 5th to 9th August respectively. The subjects to be covered in the first Seminar include: technical libraries and information centers, machine aids to librarianship, documentation survey, and report writing. The subjects for the second week are: theory of classification, operations research and the library, machine literature searching, and technical editing. There will also be open evening sessions for the consideration of specific problems suggested by participants. Further information can be obtained from: Jesse H. Shera, Dean, School of Library Science, Western Reserve University, 11161 East Boulevard, Cleveland 6, Ohio.

Pergamon Institute

The Pergamon Institute of London and New York has been set up to further the fullest use of Russian and East European scientific and technical literature in the Western countries. Among the activities proposed are a symposium on the teaching of Russian to scientists, to be held in 1958; publication of a series of review volumes covering broad areas of Russian research for the period 1920–1956; the issue of translations of a number of complete journals and monographs; and a programme for the translation of individual papers on a cost-sharing plan. The Institute also offers services to individual scientists and institutions, including a monthly contents list in English of all significant articles and books in a particular field published in Russia and Eastern Europe, with facilities for commissioning translations on a cost-sharing basis; exhaustive literature searches of the Russian literature; the evaluation of Russian work in the scientific field; the provision of the original literature, or microfilms of it, and a translation service. The Institute offers similar services to scientists and individuals in the USSR and other Communist countries. Further information may be obtained from: Pergamon Institute, 4–5 Fitzroy Square, London, W.1.

ASLIB INFORMATION

Aids to bibliographers

Cleaver-Hume Press have decided to print on the verso of the title page of all their books a short statement giving the total numbers of each kind of illustration in the book. This practice is also to be adopted by their overseas partners, Elsévier of Amsterdam and Philips of Eindhoven. Members of Aslib will welcome this attention to the needs of librarians and documentalists on the part of this very important group of scientific publishers.

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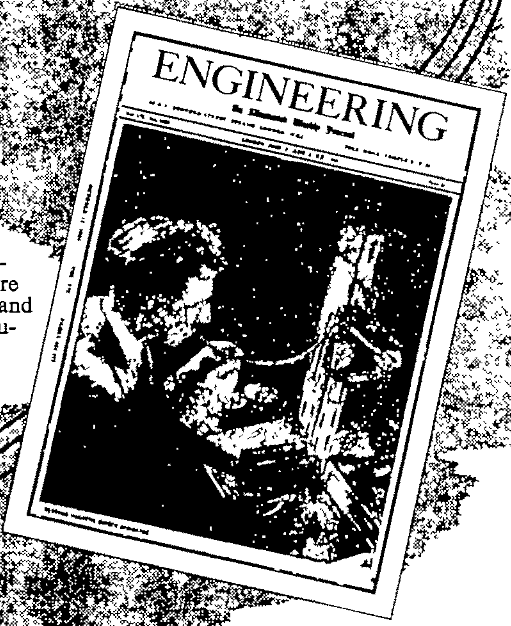

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THE WORK OF THE BUSINESS ARCHIVES COUNCIL

BY PROFESSOR R. S. SAYERS

Research Adviser, Business Archives Council

*Conference on Business Records, London, 27th March 1957**

BEFORE I describe the work of the Business Archives Council I may perhaps be allowed to refer to my personal approach to the matters we are discussing here today, since my personal attitude is bound to colour all I have to say. I start from the position that whether we like it or not, and whatever we say here today, and whatever the business men of today do about it, the people of future generations will study history and write history. It is a study that satisfies something in our human nature—hosts of people, far outside the ordinary circles of scholarship, have a taste for history and will make some effort to satisfy that taste. And history has some educative value: it helps us to maintain a reasonable perspective when facing apparently novel situations. History will therefore continue to be written whether we do anything about business archives or not. The practical question is not between history and no history, but between history based on well-assorted materials and history based on lop-sided materials. For some materials will be preserved, in one way or another, particularly those relating to government and to legal questions, which have to be preserved for highly practical reasons. If business records are by-and-large destroyed, the picture drawn by future historians will be lop-sided.

I shall be told that history is anyway lop-sided, because much cannot be preserved. The spoken word must perish, and of it no written report can give a full account; equally perishable are almost all the manifestations of personality, whether the bewitching eyes of Helen of Troy or the expression of that phrase 'Some chicken! Some neck!' I admit all this, but there are degrees of adequacy of records, and we have in the history of economic history itself a glaring example of what follows when the collection of archives is confined to government departments. Fifty years ago English economic history was largely based on governmental inquiries instituted when something had obviously gone wrong, in the early factories, in urban housing, in banks that broke, and so on. It was a picture of the diseases that sometimes afflicted the body economic; knowledge of the body's health and growth was limited to a few shaky figures collected by tax officers. The one aspect that was left untold was the activity of man in the ordinary business of life.

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* The two papers presented at the morning session, by H. R. Mathys and Rupert C. Jarvis, were printed in the June 1957 issue of *Aslib Proceedings*.

Even now, it is often easier to write the history of a firm that misbehaved or was unsuccessful than the success story of a firm that is celebrating its centenary or 250th birthday. For reasons no doubt better known to you than to me, the old-established firms do often like to have their histories written (and this certainly promotes the emergence of reasonably balanced economic history); given this want, it is up to the firms to take some care that all the interesting papers are not destroyed. The trouble is, of course, that there is far too much paper to preserve. What is the business man to do in the face of this dilemma? The Business Archives Council exists essentially to provide an answer to this question.

The Council was founded, under the title of 'The Council for the Preservation of Business Archives', in 1934. Its formation was announced in *The Times* by a letter over a distinguished list of signatures: the first signatory was Stanley Baldwin and the last was J. C. Stamp. Its success, the signatories rightly prophesied, depended peculiarly on the friendly co-operation of a great number of business firms and private families. The Council set out to check the destruction of records where the sole motive was pressure of space, by arranging for their deposit in suitable places, and by furnishing expert advice on what deserved preservation. It set out also to discover, and make known to historians, the existence of business records in the possession of firms and families.

The formation of the Council was timely, in that interest in historical records in the country generally was increasing. Many firms established in the first half of the 19th century were reaching their centenaries and wished to celebrate them by telling their own stories. The banks were prominent among these firms, and they have remained among the Council's staunchest supporters; but the interest extended through a variety of industries. There was, too, increasing attention to economic history in the universities, as one facet of the rise of the social sciences generally. The Council was therefore able to enlist the interest of scholars in universities throughout the country. The Master of the Rolls appropriately enough became the Council's President, Professor G. N. Clark, then Professor of Economic History at Oxford, was its first Chairman, and Mr. A. V. Judges its very energetic Secretary. It had an address at the Institute of Historical Research, but it did not set up any large organization. It regarded its function in the first instance as that of putting the right people in touch with each other, securing that people looking for advice should get that advice in the most expert quarters, whether it was scholars advising business men on what should be preserved, or business men advising scholars on what had been preserved. The Council was essentially a go-between.

One rather more substantial activity was projected at the outset. The original letter to *The Times*, back in 1934, announced the Council's intention to compile a register of all business records over one hundred years old. This work, though not now restricted to the old records, has been proceeding ever since, when conditions have permitted. But it is obviously dependent on the co-operation, and indeed the initiative, of business firms, and in seeking more publicity for the work of the Council we have it in mind that more firms will come forward with the information for this index. Some firms, among them the large banks, have deposited with the Council catalogues of their own collections of historical records, and have thereby facilitated important original work by economic historians. (A recent example in my own field is Dr. Pressnell's book on Country Banking.)

The development of the Council's work was inevitably slowed down by the war; but the need for it was very heavily underlined. Once more there was the call of the paper manufacturers for pulp and, far worse than before, there was the threat—and the reality—of destruction by bombing. (I know one firm, whose roots go back 300 years, that lost its most valuable historical records by a single bomb; those records had never been worked over or even catalogued.) By a few people (especially Professor Ashton and our present Secretary, Miss Shrigley), great efforts were made, and during the war itself and in the early post-war years important, if unspectacular, progress was made in fulfilment of the founders' intentions.

It was in this phase that the Council's work in advising on preservation and in arranging repositories became most active, and this has continued. The Council has not until very recently had any accommodation of its own for the deposit of records, but has had to depend upon the goodwill of librarians. The London School of Economics and the Institute of Bankers Libraries have been most active, but not by any means the only ones. The Guildhall Library and many public libraries have given valuable assistance, and the Council has thought of its task, in this direction, as that of putting owners of records into touch with libraries or local record offices who could undertake custody. But it was sometimes asked to accept at short notice blocks of material that needed sorting, and the work was hampered by lack of room. The Council has now, however, a room at Devereux Court to which records can be taken pending sifting and the finding of a permanent home for them.

This room also provides much-needed space for the library the Council has accumulated, of the business histories which have been published in great numbers during the last thirty years. As many such histories are printed for private circulation only, the collection and the catalogue prepared by the Secretary are of great value to all economic historians. In connection with these histories of firms, I should add that the officers of the Council have frequently been consulted by firms seeking historians to write their stories: in this, as in many other ways, the Council is serving as an intermediary for firms on the one hand and historians on the other.

The Council some years ago took over from the London Chamber of Commerce a list of firms which are more than one hundred years old, and the Secretary has been making great efforts to complete this list, both by extending it to cover the whole country and by adding firms as they reach their centenaries. The Council hopes to publish this list, showing brief particulars of each firm—where it is located, what records it has covering what periods, what commodities it has dealt in, and with what areas it has traded. This list should become a useful tool-of-trade to all concerned in economic history. Its publication will, we hope, be greeted by a flood of complaints of omission, which will make possible a more complete second edition and constant revision thereafter.

One of the most difficult parts of the Council's work is in advising firms on the selection of material for preservation. Always there is the trouble about the bulk of paper and books; and it is just idle to advise that everything should be kept. Yet in making a selection the Council is taking upon itself to forecast the tastes of future historians. There is no absolute and eternal rule about what historians will want to see—fashions change in history as in other matters. In general the Council has urged that the dilemma can be ignored for any material dated before 1800: the surviving material is too scarce for us to worry about the bulk. For post-1800 material the answer must lie largely in the word 'sampling': many documents are so like any other that there is little point in keeping more than one example here and there. But there is almost always some sacrifice: one scrap of routine information may be the vital clue to dating or understanding another document that is anything but routine in subject. And the scrappiest scraps are sometimes the most interesting: one of the most illuminating documents I ever found was an envelope on the back of which, in handwriting I recognized, a famous man had jotted some ideas to put in his pocket when going to a meeting. Obviously highly skilled advice is essential, and the Council, with its contacts with specialists in the universities, can arrange advice that no local archive officer would pretend to offer.

The Council tries to take as its parish the whole of the United Kingdom, and one of the main items on its agenda for the next few years is to develop its contacts outside London. These contacts are of two kinds: with the firms and with the scholars. It seeks (and largely has) representation in every university in the United Kingdom, and its contacts with firms outside London are rapidly increasing.

In broadening its contacts with the business world, the Council seeks, as it has sought from the first, to break down the barrier that exists between the historian and the business man. There still remains, there always will remain, some suspicion of the outsider who comes prying into the business, and the Council tries, by its introductions, to give to firms some assurance of the standing and integrity of research workers. But fear of discovery of the family skeleton no doubt continues to inhibit firms. To any such I would say two things. First, harking back to my introductory remarks, I would remind the business man that the skeleton in his cupboard is a dandy as compared with the skeleton an uninformed historian of the future may father on him. Secondly, is there really anything to be ashamed of in the troubles of long ago, when they have been surmounted so successfully that the firm has lived to reach its 100th or 200th birthday?

I have spoken of the United Kingdom as the Council's parish, but it does have its contacts with other countries. Scholars from other countries, especially the U.S.A., often seek advice on United Kingdom business records. And in some other countries there is great interest in their own business records, and organizations similar to our own have developed: notably in the U.S.A. and Australia. By keeping touch with these organizations, we can further the wider aspirations of the Council's founders.

The Council is supported by donations from the large banks (led by the Bank of England), insurance companies, academic bodies, large business undertakings and private individuals. This support will have to be extended, if the Council is to extend its effective work of disseminating the information it collects. The support could be in a large number of small subscriptions. It is perhaps not always realized that the Inland Revenue allows refund of tax on donations made under covenant.

My purpose today is, however, not to ask for money, but to make the work of the Council more generally known. Particularly I must stress its work as a specialist intermediary. It is a tiny organization, and ought to be a little bigger. But it need never be a mammoth organization. Its task is rather to see that existing organizations—the libraries, the record offices, the universities—are used by the business firms: a small task, mainly advisory, but necessarily a specialist task.

DISCUSSION

The Chairman for the afternoon session of the Conference was Mr. Stephen H. Twining, Director of R. Twining & Co. Ltd. Opening the discussion which followed the paper by Professor Sayers, MR. FRANK SMITH (Royal Aeronautical Society) observed that the afternoon session seemed to be concerned with quite different matters. At the morning meeting, Mr. Mathys had given a survey on the preservation of business records—punched cards and the bookkeeping and various mercantile records needed in modern commerce. Mr. Jarvis had dealt more fully with the archivist. The real question was, what was of interest to posterity—national posterity?

For that reason, one could safely tell Mr. Mathys to use his own discretion and the discretion of his firm in destroying everything he could in order to save shelf space. On the other hand, those firms which had been established longer than a hundred years, and had records of the kind contemplated in the Exhibition, should make every effort to keep them as long as they could. They should preserve them in spite of everything.

On the question who was to discriminate as to what should and what should not be thrown away, there was surely a solution in the modern superannuation schemes. Every year there must be a man who was going to be superannuated, say at sixty-five. He had probably spent many of his working years in the same firm. He must have a real appreciation of what would constitute the history of the firm and would be appreciated by posterity. He could be appointed as an arbitrator for five years in succession and could be followed by another man who was due for superannuation and would serve for another five years until he was seventy, preserving records for posterity.

PROFESSOR SAYERS said that this was an interesting suggestion.

MR. H. R. MATHYS (a Director of Messrs. Courtaulds, Ltd.), referring to the period of one hundred years, said that his own company had been in existence for 157 years or thereabouts. Surely the two problems to which the last speaker had referred were one and the same. There were some lovely volumes of records on exhibition at the back of the hall and some people had a vast quantity of records which they did not know what to do with. It was easy enough to recommend destroying them, but would it be said in one hundred years' time that it was unforgivable? This was where the two problems came together. He wondered why Professor Sayers' Council had set a term of one hundred years. Was it just an arbitrary and necessary period, or was there any particular secret about it?

PROFESSOR SAYERS said that there was no particular virtue in one hundred years. The Council felt that firms who were reaching the age of one hundred had an interest in their past and were easier to convince that a start should be made in ascertaining what records existed and collecting some of them. Less was known about older firms, though there was a list of firms more than one hundred years old. The Council had never ignored the problem of the firm that was passing from the first to the second birthday. It was ready to advise any firm. And far be it from him to say it was only interested in firms that were one hundred years old.

The work of selection and advising on the selection of records was, of course, infinitely more important for firms that were less than one hundred years old because there were far more records. Many of them were already of interest to the historians and many more would be of interest in the future.

MR. C. C. JOHNSON (British Transport Commission) said that the business of the meeting was surely to try to convince the hardheaded business men and women who were present that the preservation of records was not merely a question for the historian and the antiquarian. It was also one for the business side. Might he explain very briefly one or two interesting points that might appeal to them?

The Commission instituted an inquiry into expenditure on capital works dating back to the middle of the last century. It was a purely utilitarian inquiry, and the question arose as to where in the world records would be found that would show precise details of expenditure on capital works in the middle of the last century. If they did exist, were they in such a place and such a form that they were worth investigating? Fortunately, a large number of these records were available, and they were worth investigating.

The immediate result of this lengthy investigation—although he would not go into the financial details—was the saving of several million pounds. This might appeal to the business side

There was another utilitarian inquiry, this time into the best method of dealing with excavation and embankments to ensure that embankments did not slip and suffer from weathering and so on. Was there any information? There was very much information on the best method of dealing with embankments—sowing special kinds of seeds and so on—over a century ago which was very useful for the present time.

He hoped Professor Sayers would agree with him that it was not merely from the historian's point of view that these records should be preserved, but that he was trying to marry up the commercial interests of today with the historical interests of yesterday and he was saying that the end he had in mind from the point of view of the historian and the economist and the commercial man of today was in fact one and the same.

PROFESSOR SAYERS said he fully agreed. Of course, it was in the interests of the business man, even from the narrow profit point of view, to draw on the experience of the past. Let the business man draw on the experience of the past! But let him have it there to draw on! And it was not merely a matter of having it there. It was knowing where it was. There was great wealth of material in this country now that was not recorded. It was tucked away in various places, in private houses, solicitors' offices, in the vaults of large banks and so on. People were asked, 'Have you any old records? Have you any old books?' They replied, 'No, no!' But here and there one came across a clerk or someone else who happened to have some interest in the past, and he would say, 'Yes, I have known there is an old box—or half-a-dozen—for ages, but I have never had time to take it out.' And something would be found.

One of the functions of the Council and the other records bodies was to see that they knew of any records that were in existence so that the experience of the past might be drawn upon not merely for the historian's purposes, though naturally he considered that this was the purpose on which he should speak, but also for the business man's own quite mundane purpose and for the use of public bodies that were concerned with making decisions nowadays.

MR. JACK BIRD (Aslib) pointed out that reference had been made at the morning meeting to house journals. He did not know whether the Council did anything about semi-published material of that nature, but these journals were being produced in large numbers and were, conceivably, of potential value. It might be a good system if, for instance, a firm could arrange to deposit its house journals and similar publications with its local public library. This was a proper function for a public library and much of the semi-published business material could most successfully be dealt with in that way. It would get lost sight of in a large national organization. If it was sent to the British Museum it would be packed away at Colindale and no one would see it for another two hundred years. But by an act of co-operation with the local authorities a lot could be done towards preserving the records of the past and making them accessible in a way which would be comparatively easy for the student and for other people to use.

BUSINESS RECORDS AND THE HISTORIAN

BY PROFESSOR J. SIMMONS, M.A.
Department of History, University of Leicester

Conference on Business Records, London, 27th March 1957

WE have been considering the preservation of business records today from three points of view: that of the owner, the custodian, and the user. The term 'user' really comprises two different kinds of people: the owner and his staff, who may wish to use the records for purposes bearing directly on the conduct of the business; and the student of history, who sees in them the raw materials out of which his work must be fashioned. Professor Sayers has been speaking of the Business Archives Council, its activities in advising owners on the problems concerning the preservation of records and access to them. My task is to consider the wishes and needs of historians in more general terms.

I take it we should all agree that the purpose of preserving these records is first of all a practical one: to help business men in their work by making available to them, as readily and conveniently as possible, the records of business dealings, of administration, of past events, decisions, and discussions, which may prove significant at any time in the unforeseen future. But beyond this purpose there may lie another: to serve the needs of the historian.

Any responsible student of history understands that the practical purpose comes first and must mainly determine the policy of the owner regarding preservation. But, when that has been said, his interest remains a legitimate one, which needs no apology. Indeed a considerable, and steadily increasing, number of business firms recognize the keen interest that students take in their history and in the records on which that history rests. Our chairman this afternoon, Mr. Twining, has given us a delightful history of his own firm, based plainly and soundly on its well-preserved records.[1]

In considering what has been done, and what might be done in the future, to meet the wishes of historians anxious to consult business records, I should like to say a word about one or two of the great nationalized corporations that have come into being in recent years. The largest collection of the records of private businesses in England—one of the largest, indeed, in Europe—is that now owned by the British Transport Commission. Here are the records of the companies that made almost all the canals and railways of Great Britain, their interests stretching out into the associated fields of road transport and shipping, touching the whole economic and social life of the country during the past two centuries at every point. Only two years after it was established, the Commission set on foot an inquiry into the problems presented by its records, and the resulting report[2] led at once to the setting-up of a repository for their preservation, under the control of an Archivist, Mr. L. C. Johnson. In the subsequent six years the Archivist and his staff have brought the vast mass of these records into order, listed them, and made them available for use; and the Commission has granted students access to all those earlier than 1900.[3] Much more recently, another similar corporation, the National Coal Board, has also appointed an Archivist, who faces a similar task.

These developments are most welcome to historians. My main concern this afternoon, however, is not with the public corporation but with the private business. Having saluted the Transport Commission and the Coal Board, I must pass on. In considering private business records, I wish to concentrate on three questions. What does the historian want? What is his attitude towards the owner? And what is the most helpful attitude the owner can take up towards him?

The historian may be interested in many different aspects of these documents: in the evidence they may furnish on prices, wages, and profits; on business methods and techniques; on the organization of trade, the routes it took, the transport that was available to it. Or he may be concerned with the political influence of the firm or the particular interest it represents—the 'West India interest' in the eighteenth century, for example. Again, he may be considering the human side of business—conditions of employment, staff relations, the personal activities and careers of owners and managers.

Now it is the job of the historian to make sense of the past. He is not concerned —or not usually—with the investigation of current problems: still less with prying into 'trade secrets'. He recognizes that these documents are the private possession of the firm. Much though he may regret it from his professional point of view, he is bound to agree that it is for the owner to decide whether or not he shall be allowed access to these documents, and if so on what terms: that the owner has a perfect right, indeed, to destroy them if he chooses to do so. No historian could fairly protest when, immediately before his death, Sir George Goldie burnt all his papers—and so made it impossible for the full story of British enterprise in Nigeria ever to be written; or when, at the end of the last war, Sir Edward Watkin's daughter destroyed his business correspondence, which bore on many aspects of railway development in England and Canada in the nineteenth century. These were deplorable—one might even say disastrous—decisions. But, in making them, the owners of the documents were within their rights.

When he has examined the records, it is for the historian to decide on the right way of using them. Sometimes the best thing is to publish the documents themselves, or a selection of them. This has been done by the Business Archives Council, which issued, for instance, in 1950 a volume of letters from an eighteenth-century trader in West Africa, Edward Grace, with an introduction by Professor Ashton. But more frequently the historian wishes to use such material either to construct a narrative of the history of the firm or, in conjunction with the records of other firms, to throw light on some general theme in economic or social history.

Such plans will often link up with the wishes of a firm, still in business, to know and publish something of its own history. This can lead to the production of large and important works, like Mr. Charles Wilson's history of Unilever. Speaking broadly, two kinds of treatment are possible here: the short, popular, 'readable' history, designed for the largest public that can be induced to peruse it, and the fuller, more elaborate academic work that may be a serious contribution to historical literature in its own right. Perhaps I may refer to a recent example of each kind in a single field—the history of shipping.

A few months ago there appeared, close together, two books on shipping companies. Mr. George Blake produced a history of the Ben Line, an attractive and workmanlike account of one of the oldest private companies that is still in the shipping business today; and Professor Hyde, in his *Blue Funnel*, gave us a history of the firm of Alfred Holt & Co. of Liverpool. Both are good books, but Professor Hyde's will be of very much greater interest to the economic historian: not merely because it is fuller, and rather more seriously concerned with rates and charges, the stuff of economic history, but even more from its careful documentation. At every point he is able to nail his statements to specific references to the private and official records of the firm. This is a point of great importance to the historian. When he cannot do this, to some extent his work is wasted: for if somebody comes along afterwards and wishes to test the truth of what he says, or to pursue it further, he can do so only by referring first to the original authority, and if no reference to that is given he may have to spend hours or days searching for it—in other words to do the first writer's work all over again. It is therefore vital that the historian should be free and able to refer to the specific documents he is using.

Professor Hyde's book illustrates another matter as well. His narrative stops at 1914. From some points of view this is a pity. The firm is still in business today, and its history over the past half-century would be no less interesting to read. But to bring the narrative down to the present time would have raised obvious and difficult questions of a strictly business kind. As it is, Professor Hyde has been free to discuss the story without reserve, and we can feel confident that the papers he has used have been made to yield, in his book, all that can reasonably be said to be of interest.

This brings me back again to the owner, and the attitude of the historian towards him. If he is prepared to allow access to his records, he may do so, clearly, on any terms he chooses. He will not normally expect to dictate what is to be said. If he does, no honest and well-qualified historian will work at his records on those terms. But he may wish to limit the scope of the book or article that is written: either by restricting its subject-matter—a dangerous expedient, which the historian will not usually welcome—or by confining it in time so as to keep the published narrative clear of contemporary problems and controversies. Naturally, what the historian likes best is an absolutely free hand. But if there must, in the owner's view, be limitation, then I think this last form is the one in which it will generally be most acceptable.

I have been speaking, as I was asked to do, from the point of view of the historian: someone, that is, who wishes to make use of important business records for the writing of books or articles. But I should like to make it clear that in my own view there is something even more important, which ought to come first. What matters most of all is that such records should be *preserved*. The owner may not feel inclined, at present, to allow them to be used for the writing of history; but if, at least, he will see to it that they are kept in good order and protected against decay, they will then retain their full value until the time comes, in the future, when he or his successors may be willing to open them to inspection.

I am aware that this begs some important questions, which have been referred to earlier today. Which records should be preserved, and which destroyed? Can any principles be found for the 'weeding' of business records, comparable with those recommended for modern Civil Service records in the

Grigg Report?[4] Where, and in what physical conditions, should such records be kept? Professor Sayers has indicated the readiness of the Business Archives Council to advise in such matters. The British Records Association, through its Records Preservation Section, is also well equipped to give such advice: so too are the County and Borough Record Offices that are now established throughout Great Britain.

All these bodies are united with the historians in desiring to pursue a single aim: the preservation of these records. They are the raw material from which a vast and complex story has gradually to be pieced together: the story of Britain's decisive and monumental contribution to the economic life of the modern world.

NOTES

1. TWINING, S. H. *The House of Twining*, 1706–1956 (1956).
2. *The preservation of relics and records: report to the British Transport Commission* (1951).
3. Cf. JOHNSON, L. C. 'Historical records of the British Transport Commission': *Journal of Transport History*, i (1953–54), 82–96.
4. *Committee on Departmental Records: Report.* (H.M.S.O., 1954, Cmd. 9163.)

DISCUSSION

Introducing the second speaker, Professor Simmons, of the Department of History, University of Leicester, the CHAIRMAN said that Professor Simmons had taken a special interest in the preservation of local and national records. He was a member of the Leicester County Records Committee and of the Council of the British Records Association He was also Joint Editor of the *Journal of Transport History* with Mr. Robbins, Secretary of the London Transport Executive.

Following the paper, MR. R. H. DE MATLEY (British Institute of Management) said he had listened to Professor Simmons with very great interest and would like to ask him one very simple question. Would he say whether it was at all a practical proposition for the archivist or social historian to tell business firms, in respect of particular records for current use, that they should preserve a certain small percentage selected at random—invoices or whatever document it might be?

PROFESSOR SIMMONS said that in some cases it might be the only practical advice that could be given. Professor Sayers had referred to sampling, and he himself agreed that that might be the only possible way to deal with exceedingly voluminous material. At the same time, it was a pretty dangerous way, because it did mean that by accident the document that ultimately would have had the greatest interest for the historian might be destroyed.

He would recognize it as a satisfactory method in practice where one was confronted with an enormous mass of material piling up in mountains—so to speak—but it was a dangerous principle to apply except in circumstances of that sort.

MR. B. C. REDWOOD (British Records Association) said it was important to underline continuity between the past and the present. Why did records survive? Because they were of immediate use to the person who made them and also over a period of years they had survival value because they had use value Surely that was the criterion that must be applied. It was not always easy to lay down principles, or rather to lay down the sort of principle upon which one should decide when confronted with schedules and varying types of records. But if one considered how certain main series had come down from the past, one had some sort of basis when confronted with the problem of the present.

MR. C. VAN RYK (Royal Dutch Shell) said he was reminded of a special document that was often forgotten. The entries in records, the register rolls of the past, were very important In later times, however, these register books were replaced by card indexes. It might be well to stress that these card indexes had the same value and might have the same function, and therefore they should also be kept. There were other records of importance, also. He had worked for several years with the company's historian who was writing its history. It was written in Dutch and would be published in an English version within a few months. Card indexes had proved to be of special value in finding information, and a company historian, like a general historian, could be greatly helped by this special kind of document if it was preserved.

Mr. M. D. H. Ross (Harrods, Ltd.), referring to random sampling, said that in the large store where he worked there were a great number of customer accounts containing many millions of entries for every year. Obviously, it would be great fun for the social historian one hundred years hence to get hold of these accounts—very great fun indeed. But he could not think any county archivist would be terribly pleased if he were told, 'Here you are. We will send you a couple of tons of account cards, and you can keep them. We will send a ton or so every year, and at the end of one hundred years you will have at least one hundred tons.'

There would seem to be a very strong case here for random sampling. There would also seem to be a good case for random sampling for orders for merchandise and other routine documents which were produced in enormous quantities.

It might be worth while for people who were interested in this matter to think more closely in terms of classes of information firms might be asked to keep. If firms were asked to keep a 1 per cent sample, consideration would have to be given to how to recognize it and what advice should be given.

Sir Hilary Jenkinson (British Records Association) said that an extraordinarily large number of interesting observations, both detailed and general, had been made. Some of them were aimed, by implication at any rate, at people who, like himself, had been engaged for a large part of their lives in dealing with the question of archives in general. He would mention only two or three of them.

There was the fact which he was glad Mr. Jarvis had raised that morning and that had been emphasized by Professor Simmons that afternoon that ultimately—he would not define the date—archives were normally going to be used for some purpose for which they were not drawn up. Archives, as a colleague of his at the Record Office used to say to him in his early days, were not drawn up for the ends of posterity. Although that was not exactly a definition, it came very near to being one. This very important fact ought to be borne in mind. His best example of that had been stolen from him by Mr. Jarvis, but he would remind the meeting of a very important series of works upon local administration which consisted of a most laborious synthesis of innumerable little items, taken from such records as vestry books and parish registers and quarter sessions or even petty sessions records. He often thought how astonished the clerks who compiled these records would have been if by some kind of prevision they had had a view of Mr. and Mrs. Sidney Webb at work! Those who were themselves interested in records were perhaps inclined to take a somewhat parochial point of view, and it was the parochial point of view that one wanted to combat.

Then there was the fact—he was not sure whether he dare mention it—that on occasion one of the enemies of archives had proved to be the enthusiastic exploiter, because he was always convinced, of course, quite rightly, that the work which he wished to attack with his little hatchet was the important one. And he was always inclined to sharpen that hatchet to the deterioration sometimes of the document. There was melancholy proof of what might occur when all kinds of enthusiastic agencies were let loose for some time after the war on the modern industrial archives of Western Germany.

Then there was the fact that had not been raised by anyone, he thought, that publication was not the answer to the great problem of what to do about archives. The Record Office started off with the policy inherited from the Record Commission which preceded it of making available for students—which, after all, was what one wanted to do because they were the people who paid the piper—the records of the past by publication.

The Record Office was coming fairly near to finishing with, he had forgotten how many volumes but it must run well into three figures after sixty years of work, making available in that way one portion of one category of the more interesting records it was concerned with. When one thought of the mass of archives with which one was confronted in dealing with business archives, one could see that publication certainly was not the be-all and end-all of one's efforts.

Arising from that fact was the one he wanted to emphasize, because perhaps it had not been emphasized as much as it might have been. There was an old recipe dealing with hares. It began with the words, 'First catch your hare'. It might have been put, 'First locate your hare and then catch him. Then and not until then begin to think in terms of brown sauce, forcemeat and the rest.' In other words, in the case of archives what was necessary at present, and so far as he could see would always be necessary, was location and registration as a first step to preventing the dispersal or destruction of material. This was the work which the National Register of Archives was endeavouring to perform and to a large extent the work which the British Records Association had been endeavouring to perform, either by itself or through its Records Preservation Section, by converting to an archives policy local authorities and others who had the power to do the work in question.

That really was the matter, he thought, that ought to be stressed: that location, and conservation which implied making available for study, was the task which really confronted anyone who was interested in the preservation of archives.

Another point was that one could not treat business archives or modern archives or any other category of archives in watertight compartments. They were all part of one large body, the body not of public archives but of national archives. That very fact imposed a certain responsibility not only on the persons who were employed either professionally or by their interest in working upon them, but upon the owners of them to do something for their conservation and availability in a reasonable and proper manner.

The question, then, that suggested itself at the end of the conference and in virtue of the considerations he had just been trying to put to the meeting—and other like ones with which he would not trouble them—was a practical one. Were they going, as a result of having met in that room and listened to some very wise words, to try to do anything?

There was in existence the British Records Association, now in its twenty-fifth year. It existed in order to create—and had been very successful in creating—a body of public opinion favourable to the conservation and to the making available of archives, archives of all kinds, never mind the date, never mind the category; those documents which were not collected but which had accumulated naturally in the course of the transactions of business of any kind.

There was the National Register of Archives, a younger institution which owed its origin to some extent to the British Records Association but which was an official body and which—he could say, as he was not personally connected with it—was doing magnificent work in organizing voluntary work in all the counties of England and in creating a great central register of archives, again regardless of date or category or anything else.

There were other bodies, of course, such as the Council for Business Archives and so on.

Was it not time, would it not be suitable as a result of the Conference, that some practical effort should be made to tackle some of the great problems which had emerged?

There was, for instance, the problem of elimination. He had not heard the word used at the Conference, but it meant getting rid of documents. Now, he freely admitted that private owners, as Professor Simmons had said, were the judges of what they should keep. But he was assuming—and he felt sure he could safely assume—that private owners, such as the owners or directors of great commercial undertakings, or the owners of any of the numerous categories of archives, would agree that it was most desirable that their conduct in regard to the elimination of records should be homogeneous and result from a defined policy. Well, that policy should be defined.

Similarly, there were numerous other problems. One had just been referred to—storage. If the owners of private archives decided that they could not keep them any longer but they were willing that someone else should keep them for the purposes of the historians, who was going to be the custodian? How that problem was to be settled he was certainly not prepared to define at the moment; but twenty-five years or so ago it was raised with apparently equal hopelessness in the case of the deeds and court rolls, and the answer was found. It was found in the creation of record offices by local authorities which did, as a matter of fact, find a home for those particular categories. He did not think the problem, in spite of the enormous mass now created of modern private archives, would be found insoluble. Anyhow, it should be tackled, and tackled by a single small body which would report the results of its consultations on behalf of all the persons interested—owners, historians and archivists.

He was not proposing a resolution; he did not know that resolutions were called for. But he would like to think that a measure of co-operation would be achieved—much closer co-operation than existed at present in all cases, though in the case of the two bodies he had mentioned, the National Register of Archives and the British Records Association, co-operation was already close. He would like to think that co-operation would be made more close in regard specially to the most important archives—the archives of private businesses—which the Conference had been discussing.

MR. R. MAURICE (National Union of Manufacturers) said he would like to raise one point of importance in securing co-operation between the historian and the business man. It was the use of the word 'archives', which was not in the vocabulary of the man in the street or the ordinary business man. Businesses had a vast system, an efficient system, with its accounts department, statistical department, perhaps a small department with one man or several departments, but they did not have any archives. 'Archives' was a word traditionally used by the historian, a word that belonged rather to the universities. If business was to co-operate, one did not want to talk about archives. Probably the solution lay in a certain amount of flattery, particularly in the case of the smaller business. There were a great many which had a history of four, five or six generations, and they would be tickled to death to fine someone was interested in the history of the business. This was particularly so where the owner had been trying all his life to interest people in the fact that he was the descendant of the founder. If he was approached on that basis, on the basis that he had something of great interest, his co-operation would in many cases be obtained.

The CHAIRMAN said he thought the speaker was right.

MR. V. R. COLEMAN (American Library), following up the last point, said he thought business would have much greater sympathy towards the historian if emphasis were laid on the public relations value of the publication of the history of the various firms. There was a famous business man who said that history was 'bunk', but that did not stop his successors from printing a very useful document which did very valuable public relations work, according to this particular firm. If the historians and historical organizations represented at the Conference could get the business man to believe that the archives would be useful from that point of view, it would also help the historians.

MR. D. CHARMAN (Ipswich Record Office) said the substitution of the term 'archives' by some other term had been suggested. In this connection, he would like to mention that confusion might arise between 'records' and gramophone records.

This was not the main point he wanted to make, however, which was that mechanical methods were used to make records today. There seemed to have been a marked change in methods of record-keeping, which was largely due to the introduction of the machine. It was confusing to the modern archivist or record-keeper that he could not find, in the old sense, the main records which he could identify and preserve. In the old businesses there were always a certain regular set of account books, correspondence, minutes and possibly vouchers, if anyone was strong-minded enough to take them over. Nowadays records had been fragmented, and one of the main approaches to the problem of modern records was through the evaluation of the modern techniques of record-making, in order to determine, under the new system of records, which were the main records, if that was a possibility.

As a local archivist, he found great confusion in dealing with the records, for example, of the treasurer's department. The old main records were still there, the account books, but there were nothing like so many as there used to be. What were the main records now, with this fragmentation? An evaluation of the current techniques of record-making would be an important contribution to the elimination of records.

MR. FRANK SMITH (Royal Aeronautical Society) said there seemed again to be two points of view—the preservation of archives from the point of view of recording the firm's history and the preservation of archives from the point of view of a mirror of the times. It was emphasized that old records enabled one to get some idea of the way of life of the past and were useful to the historian. Surely there was no need for firms to keep records to provide the future historian with a mirror of present-day life when there were television, tape-recorders, the cinema and tons of printed matter to give an adequate picture of the twentieth century without individual firms having to keep masses of account cards and machine-produced papers in order to give the historian some idea of its way of life.

Therefore, he would suggest that archives be taken as starting and finishing at a very definite period, and that archivists in general should do all they could to preserve records that would be useful. He himself had had several instances of most valuable material being destroyed one or two weeks after he had applied to a firm. They said, 'Oh, we did not think it was any use. We put it in the bin.' He had tried to get people to preserve their material by writing letters to the press, and he had written to both local and technical papers. All he had had in reply was perhaps a handbook and so on. People would not pick out material and send it to places where it was wanted.

PROFESSOR SIMMONS said that while he agreed that changes in the circumstances and techniques of the modern world had to some extent altered and perhaps lessened the obligation to preserve records, he did not think the existence of television, gramophone records, the radio, and so on, had much bearing on the topics under discussion. They did not in any way minimize, for instance, the importance to the historian of documentary materials for economic history. They made no difference to that at all. He did not feel there was any way—in spite of what the last speaker had said—in which a particular date could suitably be adopted at which television became general, or something of that sort, as a dividing line between the point at which records should and should not be kept. It would introduce a dangerous and difficult distinction, one which would be regarded by future historians, say in fifty years' time, as very unfortunate.

MR. FRANK SMITH said he gave television as a symbol. Everything was so topical that practically every aspect of life—as far as the future historian was concerned—must be covered.

MR. M. D. H. ROSS (Harrods, Ltd.) said that one of the singular features of the social scene at the present time was that there was very little documentation in business life. There was very little literary work and few serious films about what it meant to work in a big business company. One of the significant features was that the public did not seem to want to know about it at all.

MR. J. B. ADAMS (Burndept) said there was a point about the storage of records. He himself was concerned with a company that was overloaded with old records and drastic steps had to be taken to dispose of them.

He could recall an immense mass of figures a little while ago, when he was in the accountancy profession, when an investigation was being made into companies whose shares were being quoted on the Stock Exchange, or when profits for the past ten years required investigation. It was necessary to ascertain the profits and find reasons for fluctuations, and this might mean ascertaining what were the conditions in regard to labour and material and transport and one hundred and one things affecting the management of the company which were not always readily available. It was specially difficult where a company acquired subsidiary companies, privately owned, during the period under investigation. Further information would probably have provided truer reports and also brought down the cost in fees for inquiries.

MR. H. R. MATHYS (a Director of Courtaulds, Ltd.) said he wondered whether Mr. Ross had ever been to the Appointments Bureau of a University He would have found there plenty of written matter saying how delightful it was to work in industry.

MR. R. L. W. COLLISON (Westminster Reference Library) said it was his pleasant duty to propose a vote of thanks to the two speakers.

During the course of the Conference, including the morning meeting, they had heard much about weeding and elimination. Every time he heard this a shiver went down his back, because he remembered those churches which enthusiasts in the nineteenth century renovated so nicely by putting the renovation back again. It reminded him of what might happen if someone were asked to compile a history of English poetry from the *Oxford Book of English Verse*.

It was gratifying that Professor Sayers had been able to tell them so much about the work of the Business Archives Council. It was remarkable that the very fine work of the Council should be so little known and so little exploited, even by historians today, because there was no doubt that but for the efforts of the Council much would be lost.

They were specially grateful to Professor Simmons, not only for what he had told them about business records in historical research, but also for the efforts which he and his colleagues, such as Dr. Hoskins and Dr. Thirsk at Leicester, had made to preserve the history of business enterprise in this country.

Professor Simmons mentioned that the very first publication of the Council for the preservation of business records was Professor Ashton's book on West African traders. Recently a publication came out on British West Africa from the University College there in which it was said that the destruction of business records in British West and Central Africa was going on daily because people did not appreciate their importance. By the same post came a letter from French West Africa in which the archivist of that region apologized for not replying to a letter, saying he had been on tour in the provinces, trying—mostly in vain—to persuade people to preserve their business records. It brought out an additional aspect of the whole problem and showed that it related not only to this country but even more importantly to the Commonwealth as a whole. What had been said at the Conference might be some encouragement to people who were isolated in distant parts and were perhaps alone in realizing the value of these records.

He believed this was the first great conference at which business people in any number and archivists had been brought together. He did feel that it had established a very real and common interest. Whether one liked it or not, archives were still increasing very rapidly. He did not think anything could be done to stop them. The problem must be how to preserve them most effectively and how to make them available most easily for the use of all. He was hoping that this would be achieved. The first move was to get down to detailed discussion and study of how it could best be done.

He often thought that one of the greatest acts of faith in—should he say?—ordinary life was that of the man who planted a great avenue of trees. He knew when he planted them that he would never see what they were like. There was the same problem with regard to business archives: the business firm which co-operated—really and truly co-operated—in the work of preserving business archives, under the guidance, perhaps, of the policies referred to at the Conference, could never hope to see the results. It must be an act of faith in what was, after all, the life-blood of the whole country—the trade, commerce and industry of the country.

Therefore, it was with great pleasure that he proposed a vote of thanks not only to both the speakers but also to the people who took part in the discussion, and to the very distinguished Chairman, for a most encouraging afternoon.

The vote of thanks was carried by acclamation.

PUBLIC RELATIONS IN LONDON TRANSPORT

BY W. R. ROBERTSON, M.INST.T.

Public Relations Officer of London Transport Executive

London, 25th April 1957

BEFORE I begin to talk to you this evening on public relations in London Transport, I thought it would help if I were just to touch on, in a general way, this phrase 'public relations'.

There is nothing magic or mysterious about it. It is no 20th-century gimmick capable of achieving the impossible. The hard facts are that, although public relations is a comparatively modern business term, it represents something which has been going on in the commercial world for very many years. For instance, we in London Transport have had a public relations organization for the last twenty years, but public relations functions were carried on by London Transport for many years before that.

What then is public relations? It can be defined briefly as the representation of the public point of view to the management and, conversely, the representation of the management point of view to the public.

Public relations is concerned with all aspects of the activities of an undertaking to a greater or a lesser degree. The public relations side of an undertaking of any size is invaluable because it can, and decidedly should, be a sounding board between the management and the public.

The public benefit because an undertaking with a lively public relations department—and I stress the word 'lively'—can see to it that the customer's point of view is kept fully before departmental managers and the top management when policy is being discussed and before important decisions are taken. But there is one point which I would like to bring out, and that is to correct the fallacy in the minds of many people that public relations officers are screens and shields whose only functions are to protect the management. This is a completely wrong conception.

In a nutshell, therefore, public relations keeps a finger on the public pulse, and as far as London Transport is concerned this pulse gives rise, at times, to anxiety!

Public relations has developed following a growing consciousness of the need for commerce to consider meticulously the customer's point of view.

Public relations is vital today, and it can be seen in many forms. For instance, the small trader dealing with the necessities of life spares no effort—if he has any 'go' about him—to retain the support of a satisfied customer. To a large extent his actions may be governed by local competition, but this underlying principle of helping the customer and gaining his confidence is the same for the larger undertakings which, in addition to providing the necessities of life, also deal with luxuries.

Now, in this business of selling luxuries there is a wider and more intense competition for the limited amount of money in this world of price indexes, rising costs and rising wages, which the man-in-the-street has to spend. Public relations, therefore, has a great part to play in this question of luxury trade. Even we compete in it—to increase our pleasure traffics—as you will appreciate later.

An important change, as you are well aware, has been taking place in business and industry since the war. That change is that the human factor is ranking first, replacing the dominance of material and financial factors, though the latter can never be ignored by management or the public at large. Here public relations is very much concerned.

And when I say human factors I mean not only the public served by the undertaking but also the staff employed by that undertaking. Good public and staff relations are important in any business whatever its size, but the larger an undertaking is or becomes, the greater degree of attention to these aspects is required by the management. This particularly applies in transport, where there is a great need to inform both public and staff simultaneously of developments. If timely provision of information is given to the staff it enables them to satisfy the queries of passengers and helps them to do a public relations job in explaining to the public the reasons for the action taken by the management. The difficulties of doing this to any extent are considerable, but we are trying to do this in London Transport, where every uniformed member of the staff is a kind of Public Relations Officer.

If the medium of public relations is to be used quickly and effectively, the public and staff relations aspects of any major project require to be brought under review in the earliest planning stages, and this principle is an integral part of modern management.

To turn now to London Transport. There is no time in its history when it has not had a lively appreciation of the importance of public relations. The very nature of its business, which is to sell—if you like to put it that way—seats on its buses and trains to the millions who use its services daily, makes goodwill and understanding even more important to a passenger transport undertaking than to most kinds of commerce. London Transport is always in the public eye. It is always 'news'. It is very vulnerable to criticism because it is a monopoly, although very many people have a wrong conception of this word 'monopoly'.

London Transport is fighting for traffic today. Its competitors are the motor car, the motor scooter, the bicycle and television set, and serious competitors they are too. In the past few years our traffics, particularly in the off-peaks, have dropped appreciably. Therefore we must go all out to get back as much of it as we can.

The only monopoly we possess in the London area is that of providing bus and Underground services. There are many cries of 'Why don't we put a bus route down this road', or 'Why don't we let a private operator do so', but the simple facts of the matter are that in most cases it would be financial suicide to do so and a private operator, to whom we recently gave approval to run a service, has found this out to his cost.

It is very necessary that the Londoner should realize that it costs a lot of money to run London Transport, and that you cannot run an undertaking of this size on a shoestring. I mention all this to give you an idea of the importance of public relations in London Transport, and the need to get our point of view over to the general public.

You see, London Transport does not rely for its economic stability on its established traffics, i.e. the people who must travel to get to and from work. The economic or financial success of the undertaking depends largely on obtaining, retaining and developing the pleasure, or optional, traffics. This can only be done by the attractiveness of the services or the places served, or a combination of both, resulting in people wishing to travel by public transport and not by their own means. The amount of rolling stock and the number of staff to be employed by a transport undertaking is governed by the periods of maximum traffic demands when the most intensive services are operated. We, for instance, have to bring all available buses and trains into service for about three hours in the morning and three hours at night. But for the rest of the day a large proportion of the huge fleet of 4,000 railway cars and 10,000 buses, trolleybuses and coaches is not wanted. The crews, however, have still to be paid and the interest and depreciation have still to be met on the capital invested in that rolling stock and in the plant needed to keep it in good running order. It is a fact that if we can increase our optional traffic we shall not be involved in any appreciable increase in our running expenses.

I will now outline to you the Public Relations activities of London Transport that are carried out.

They come under the direction of the Chief Public Relations Officer, who reports direct to the Chairman of the Executive. The Department of the Chief Public Relations Officer has three main divisions—Public Relations Office, Press and Publications, and Publicity. Each is under the control of an officer.

Public Relations Office

This Office deals with public correspondence from Members of Parliament, Councils, Ratepayers' Associations, Chambers of Commerce, and members of the public. The Office is also responsible for the Travel Enquiry Office. The Public Relations Office as a whole handles about 1,500 letters, 4,400 personal callers, and 12,000 telephone calls weekly. Let me hasten to say that not all these letters and telephone calls are complaints. The letters received fall into four main classes:—

- i Inquiries about services and requests for travel information
- ii Suggestions
- iii Complaints
- iv General—requests for visits to properties and information sought on a variety of subjects.

The bulk of the letters are divided daily into two main groups. The smaller group comprises letters from Members of Parliament, Local Authorities, and other representative bodies, concerning questions of policy, and a larger group consists of letters mainly from individuals, but all letters other than those dealing with requests for travel and other information, and visits, are dealt with on a geographical basis by two sections—a Northern and a Southern section—the Thames being the general boundary between them.

The Public Relations Office prepares a daily summary of the more important letters and telephone calls regarding services and matters of policy, and this is circulated to Officers responsible for the matters with which they deal. Each fortnight a résumé of the correspondence, including statistical information, is prepared and circulated throughout the organization, and, in accordance with common practice, charts are compiled showing the trend of correspondence and public attention to particular subjects. In this way the Members of the Executive, Departmental Managers, and Officers are informed as to the public feeling on the Executive's services generally, and also on specific matters.

A suggestion or complaint, even from the humblest user of our services, is made known to the Executive. After all the fact that one letter is received on a subject means it can be fairly assumed that other people are thinking on the same lines. Letters are a mirror reflecting public opinion, just as the way in which they are answered reflects the mentality of the Executive. It is, therefore, our practice to treat public correspondence with great care. Not only is each letter dealt with as rapidly as circumstances will allow, but it is answered in language that can be generally understood. In framing replies, certain main rules must, of course, be followed, but every precaution must be taken to avoid 'eyewash'. It is our experience, and I suppose this is true of other people, that even the most impudent correspondent will generally respond to a courteous letter based on fact. There is no doubt that psychologically it is desirable to answer letters quickly—but a speedy answer may imply lack of consideration. It is our practice to investigate in detail all complaints, and this must, of necessity, take time, since the correspondence may well have to be passed to and returned from a garage, and staff to be interviewed.

Apart from conducting correspondence, the Public Relations Officer has also to receive deputations and attend meetings with representatives of Local Authorities and other representative bodies in the 2,000 square miles of the London Passenger Transport area, in which there is a population of nearly 10 million people. There are in this area over 180 Local Authorities, excluding Parish Councils. There are also the ever-vigilant Ratepayers' Associations, Chambers of Commerce and other bodies. Meetings are also held with Members of Parliament, who, on occasions, lead deputations.

In certain areas Local Transport Advisory Committees have been set up by Local Authorities to co-ordinate proposals and to deal with complaints about the Executive's services within their areas. These Committees in most cases consist of representatives of the Councils concerned. They meet at frequent intervals. The Public Relations Officer, together with Operating Officers, attends the meetings of the Committees. Without question they serve a most useful purpose, both from the standpoint of the Local Authorities and London Transport. Their discussions have often brought to light viewpoints and travel habits of a kind that would not be obvious to even the most expert traffic observer. The members of the Committee have come to appreciate that a balance must be maintained between development services that are likely to be economic and established routes, and in due course these members appear at their own Council meetings when they not only put the Executive's point of view fairly, but on occasions support it—sometimes in face of unfavourable public opinion. As a sidelight on this aspect of Public Relations work, experience has shown that when these Committee members speak at Council meetings, and their views are reported in the local press, the public tend generally to become better informed about transport problems. This is all to the public good, for after all Local Authorities are familiar with the process of separating the wheat from the chaff; they are advised by responsible and experienced Officers, and in view of their statutory position it is clearly to the advantage of the Executive to facilitate the functioning of these Transport Advisory Committees.

It is the policy of London Transport never to refuse to see representatives of any Local Authority or representative body, and although the outcome of these meetings may not always result in the representatives obtaining what they have asked for, nevertheless they invariably achieve a better appreciation and understanding of London Transport's position in a matter. In any case, London Transport cannot be accused of being unresponsive to public requests, and the fact that such matters are freely discussed does produce goodwill and confidence that London Transport are trying to discharge their responsibilities in a proper manner and conduct the undertaking with due regard to their financial responsibilities laid upon them by Statute.

The Travel Enquiry Office, for which the Public Relations Officer is responsible, mainly deals with telephone inquiries. The service is maintained throughout the day and night, and the popularity of the service has grown in recent years, as is evidenced by the rise in the number of telephone calls—for instance, in 1952, the total number of travel inquiries dealt with by this office was 677,305, and in 1956 834,214.

I referred earlier to the fact that the Public Relations Office was responsible for arranging visits to London Transport works and properties. This amounts to something quite considerable, especially during the summer months when visitors from abroad come to London. They come from all parts of the world. It may be argued that London Transport should not go to the trouble that they do on behalf of visitors, especially those from abroad, but visitors from abroad to London Transport help the export trade in that they see first-class examples of manufacture in the form of buses and trains and equipment, especially at the new and modern Bus Overhaul Works at Aldenham.

Press and Publications Office

As I think I have already said, London Transport is always in the news. It must be. It carries 11,000,000 people a day. It is vital to the life of the community. Its red buses and tube trains are as much a part of the capital as Westminster Abbey and St. Paul's. It employs a staff of about 87,000 people, most of whom come into daily contact with the public.

It follows, therefore, that something is always happening.

You will have noticed yourselves how often the name of London Transport appears in the columns of the newspapers. It is one of the most widely publicized undertakings in the country.

Because of this intense interest in London Transport we must have an organization to deal with the press. This is done by the Press and Publications Office, and its job is essentially a two-way one. It deals with inquiries from the press about London Transport and it gives out information to the press about London Transport, for the information of passengers.

The Press Office staff are the 'Spokesmen of London Transport' whom you see frequently referred to in the papers. The Press Office, like the Travel Enquiry Office, provides a 24-hour service for dealing with press inquiries and in view of the interest in which London Transport is held by Fleet Street it will not surprise you to know that the number of calls received by the Press Office annually amounts to anything between 25,000 and 30,000.

The Press Office has an important third function and that is to watch the newspapers for comment both editorially (that is by the leader writers) and by the readers in the correspondence columns for reference to London Transport. Where possible replies are given to the newspaper in the form of a letter to the editor answering particular points, as you will no doubt have seen from time to time.

The Press Office is divided into four sections. The first deals with the London daily and evening newspapers, the provincial newspapers (such as *The Birmingham Post* and *The Scotsman*), the suburban weekly newspapers in the London Transport area, of which there are over 200, broadcasting and television organizations and film companies.

The second section deals with the transport and technical press and the third section with the production of publications for the staff, monthly magazine and the weekly news sheet. The fourth section is responsible for producing daily and weekly cuttings from the national and suburban newspapers which concern, directly or indirectly, London Transport and circulating these to the Chairman, Members of the Executive, and all the Departments. In addition, a summary of the news and comment about London Transport appearing in the suburban weekly press is circulated throughout the organization each week. The reason for this is that there is so much comment about London Transport which is of such interest to the various departments that it would be impracticable to circulate the cuttings; that would take too long, and a summary is therefore prepared.

Publicity Office

The Publicity Office is responsible for the production of posters, pictorial and traffic advertising, the style and form of bus stops (there are about 24,000), directional signs at 277 railway stations, letter-press on traffic notices, the production and publication of maps and guides, the printing and distribution of timetables.

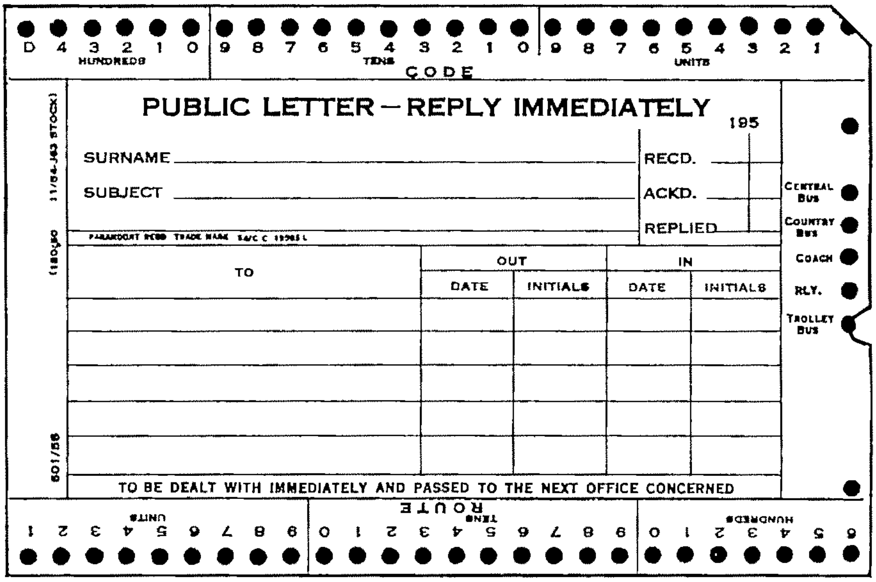
It has been conceded generally that over the years London Transport's pictorial posters are regarded as a contribution to the attractiveness of the capital city, but, of course, their main purposes are to arrest attention, provide factual information and to guide and inform the travelling public, all of which should result in increasing our traffic, and to step up the goodwill which is so essential to any business.

The work of the Publicity Office is divided into five main sections: (1) the creative section responsible for planning of all publicity posters, press advertising, brochures, booklets, maps, signs and notices; (2) the administrative section responsible for display and maintenance of publicity and directional signs for railway rolling stock and properties; (3) the section dealing with the siting and maintenance of stop signs, street direction signs, timetables and shelters on our road services; (4) the photography and film section, which also deals with the lantern lecture hire service; (5) fixing and maintenance of commercial advertising on behalf of the British Transport Commission.

People often say to me 'Well, you are a monopoly, why advertise; why put up posters; why not put the money to more useful purposes'. As I have tried to explain to you earlier in my lecture, London Transport has by no means a monopoly of carrying people today, and is facing intensive competition. Therefore, it behoves us to do all we can to encourage people to get out and about and use our services—in other words we are out to capture our bit of the 'luxury' market.

Before I conclude it may be of interest if I describe briefly the methods that are adopted for handling the correspondence received in the Public Relations Office.

I referred earlier in my talk to the fact that in the course of a week about 1,500 letters are received. Letters raising questions of policy such as might be received from Members of Parliament, Local Authorities and other representative bodies, after acknowledgment, are placed in special folders and referred to the appropriate departments for report, upon which a considered reply is prepared and despatched. Letters requesting travel information are answered directly, and in the case of requests for a map or timetable the inquirer is satisfied by receiving the documents accompanied by a compliment slip. The remaining letters dealing with requests for new or improved services and complaints about services and staff are coded—cards being used for the purpose—before they are acknowledged. They are coded according to the form of transport and the subject matter. Different coloured cards are used for each form of transport, e.g. blue for railways, salmon for central bus services, yellow for trolleybuses, white for country buses, white with a green band for Green Line coaches. The coding is done by clipping a 'V' in the appropriate



D 4 3 2 1 0 HUNDREDS | 9 8 7 6 5 4 3 2 1 0 TENS | 9 8 7 6 5 4 3 2 1 UNITS

CODE

PUBLIC LETTER—REPLY IMMEDIATELY

195

SURNAME

SUBJECT

RECD.

ACKD.

REPLIED

PARAMOUNT REGD. TRADE MARK S/C C 19985 L

TO	OUT		IN	
	DATE	INITIALS	DATE	INITIALS

TO BE DEALT WITH IMMEDIATELY AND PASSED TO THE NEXT OFFICE CONCERNED

CENTRAL BUS

COUNTRY BUS

COACH

RLY.

TROLLEY BUS

11/54-J63 STOCK)

601/56

ROUTE

6 5 4 3 2 1 0 HUNDREDS | 9 8 7 6 5 4 3 2 1 0 TENS | 9 8 7 6 5 4 3 2 1 UNITS

Example of card used for handling correspondence.

numbered hole or combination of holes, a number applying to a particular subject. The heading of the coding card reads 'Public Letter—Reply Immediately' and reflects the spirit in which this side of the work is approached. The cards are prepared in triplicate, the third card—a thick one—being retained in the Public Relations Office for recording and filing purposes, while the flimsy copies are attached to the letter which is sent for investigation to the appropriate department. One of these flimsies may be detached and retained for reference by the department dealing with the communication; the other copy is returned with the letter and departmental report to the Public Relations Office for examination and completion of the correspondence. The thick cards are filed on the 'Cope-Chat' system. Until a letter has been answered, these cards are filed separately as outstanding correspondence. It is in this way that it is possible to keep track of correspondence which has been sent to other departments for investigation and to which a reply has yet to be sent to the correspondent. The cards are filed strictly in alphabetical order. The value of this is that all the cards relating to any subject or combination of subjects can easily be extracted by passing a thin steel rod—like a knitting needle—through the appropriate holes when the required cards will fall out of the pack because of the clipping already mentioned. It is from these cards that the fortnightly statistical report is prepared.

DISCUSSION

The Chair for the meeting was taken by MR. B. AGARD EVANS (Ministry of Works). In the course of the discussion which followed, MR. R. G. GRIFFIN (Chemical Society) asked the speaker whether better use could not be made of the Museum of London Transport vehicles now housed in Reigate Garage? The museum was very little known to the general public and written permission from London Transport Executive was required before visitors could be admitted.

The speaker replied that London Transport did not possess a Museum, and the old vehicles to which Mr. Griffin referred were stored in part of Reigate Garage as a temporary measure, pending the establishment of a Transport Museum by the British Transport Commission when suitable premises could be obtained. Once these premises were available, visitors would be welcome, but at present this was not possible as it would interfere with the normal work of the garage. Whilst these vehicles were not generally available for inspection by the public, on special occasions, such as the Centenary of the London General Omnibus Company Limited when they were parked in the Horse Guards Parade, an opportunity was given to the public to inspect them.

SELECTIONS FROM THE RECENT LITERATURE

Books and Pamphlets

American Chemical Society
A key to pharmaceutical and medicinal chemistry literature: a collection of papers comprising two symposia presented before the Divisions of Chemical Literature and Medicinal Chemistry . . . Chicago, September 1953 and September 1954. Washington, the Society, 1956. iv, 254 pp. (Advances in chemistry series, no. 16.) $5.25.

American Chemical Society
Training of literature chemists: a collection of papers comprising the symposium . . . presented before the Division of Chemical Education and the Division of Chemical Literature at the 127th national meeting, Cincinatti, Ohio, March, 1955. Washington, the Society, 1956. [3], 44 pp. (Advances in chemistry series, no. 17.)

British Federation of University Women
Opportunities for girls and women in science and technology. London, the Federation, 1957. 53 pp. illus. 2*s*.

*Canadian Library Association. Reference Section
Canadian library literature index: a preliminary checklist prepared in co-operation with the library associations of Canada and their bulletins. Ottawa, the Association, 1956. iv, 79 pp. mimeographed. $2.50.

*A Directory of dealers in secondhand and antiquarian books in the British Isles, 1957–58. [4th] rev. ed. London, Sheppard Press, 1957. 216 pp. map. 15*s*.

*Directory of office equipment: survey and buyers guide to office machines, appliances, aids and systems. 2nd ed. London, Business Publications, 1957. 260 pp. 42*s*. [Previous ed. entitled *'Business' directory of office equipment and appliances*.]

Eaton, Thelma
Classification in theory and practice: a collection of papers. Champaign, Ill., Illini Union Bookstore, 1957. v, 62 pp. tables. $1.75.

Flood, W. E.
The problem of vocabulary in the popularisation of science. London, Edinburgh, Oliver and Boyd for University of Birmingham Institute of Education, 1957. vi, 121 pp. (Educational monographs no. 2.) 6*s*.

Florida. University. Libraries, *and* Pan American Union. Columbus Memorial Library
Final report of the seminar on the acquisition of Latin American library materials, Chinsegut Hill, Brooksville, Florida, June 14–15, 1956; Imogene Hixson, rapporteur general. Gainesville Fla., University of Florida Libraries, 1956. Pagination various. mimeographed. $2.

*France. Office Nationale des Universités et Écoles Françaises
Laboratoires scientifiques: répertoire. Paris, Presses Universitaires, 1956. vii, 392 pp. 1.000*fr*.

Grannis, Chandler B., *ed.*
What happens in book publishing. New York, Columbia U.P.; [London, Oxford], 1957. x, 414 pp. $5.50; 45*s*.

Hattery, Lowell H., *and* Bush, George P., *eds.*
Electronics in management. Washington, D.C., University Press, 1956. xii, 207 pp. $6.

Hewitt, Richard M.
The physician-writer's book . . . tricks of the trade of medical writing. Philadelphia, London, W. B. Saunders, 1957. x, 415 pp. illus. tables. diagrs. 63*s*.

*Indo-Pacific Fisheries Council
Directory of fisheries institutions (Asia and the Far East). Bangkok, Food and Agriculture Organization of the United Nations, 1957. viii, [78] pp.

Institution of Civil Engineers, Institution of Mechanical Engineers *and* Institution of Electrical Engineers
Engineering education in the Soviet Union; report of a team of engineers who visited Russia in the Autumn of 1956. [London, Institution of Electrical Engineers, 1957]. 28 pp. tables. 2*s*.

*Japan. National Diet Library
Directory of Japanese learned periodicals: natural and medical sciences, 1957. Tokyo, Tokyo Library Bureau, 1957. 68 pp. mimeographed. $1.

*Keppenne, M. G.
Les publications périodiques éditées par les services centraux des ministères, 1954. Bruxelles, Commission Belge de Bibliographie, 1957. 64 pp. (Bibliographia belgica 22.)

Kobe, Kenneth A.
Chemical engineering reports: how to search the literature and prepare a report. 4th ed. New York, London, Interscience, 1957. viii, 175 pp. illus. tables. diagrs. $3.

Le Menach, Guy
Initiation à la technique du livre et à la bibliophilie. Paris, Nouvelles Éditions Debresse, 1957. 188 pp. (Le guide de poche.)

London. Science Museum
Books on engineering: a subject catalogue of books in the Science Library; short-title list of books published 1930 and onwards on mechanical, civil, electrical, marine, sanitary, and other branches of engineering, with engineering aspects of transport. London, H.M.S.O., 1957. x, 183 pp. 16*s*.

Malclès, Louise-Noëlle
La bibliographie. Paris, Presses Universitaires, 1956. 136 pp. ("Que sais-je?" le point des connaissances actuelles, no. 708.) [3*s*. 6*d*.]

Market Research Society
Statistical sources for market research. London, the Society in association with the Oakwood Press, 1957. [6], 32 pp. (Publications of the Market Research Society, no. 2.) 10*s*. 6*d*.

Organisation for European Economic Cooperation. European Productivity Agency
Market research methods in Europe. Paris, O.E.E.C.; [London, H.M.S.O.], 1956. 189 pp. (Project no. 261.) 9*s*.; 450*fr*.

Organisation for European Economic Co-operation. European Productivity Agency
Scientific manpower for applied research: shortage of research workers, how to train and use them? Third international conference on the organisation and administration of applied research, Vienna, 8th–12th October, 1956. Paris, O.E.E.C.; [London, H.M.S.O.], 1957. 47 pp. (Project no. 361.) 4*s*.; 200*fr*.

The Punched card annual of machine accounting and data processing, embodying punched card operations in all types of business and industry. Vol. 5, 1956–57, Detroit, Punched Card Publishing Co., 1956. 208 pp. illus. tables. diagrs. $8.50.

Smith, J. Sandford
The management approach to electronic digital computers. London, Macdonald & Evans, 1957. xi, 227 pp. illus. tables. diagrs. 35*s*.

*Special Libraries Association
Directory of members as of September 15, 1956. New York, the Association, 1957. iv, 148 pp. $4.

*Union of International Associations
Annuaire des organisations internationales. 6me ed., 1956–57. Bruxelles, l'Union, 1957. 1266 pp. 70*s*.
[U.K. distributor: E. S. Tew, 91 Lyndhurst Gardens, Finchley, London, N.3.]

Wales, Hugh G., *and* Ferber, Robert, *comps*.
A basic bibliography on marketing research. [Chicago], American Marketing Association, 1956. [9], 164 pp. (AMA bibliography series, no. 2.) $5.

Wittenberg, Philip
The law of literary property. Cleveland and New York, World Publishing Company, 1957. 284 pp. $5.

Wyckoff, Edith Hay
Editing and producing the small publication. Princeton, N.J., Van Nostrand; London, Macmillan, 1956. vii, 289 pp. illus. plans. facsims. tables. diagrs. $4.95; 30*s*.

Articles and Papers

Bar-Hillel, Yehoshua
A logician's reaction to recent theorizing on information search systems; [with comments by Calvin N. Mooers and the Center for Documentation and Communication Research]. *American Documentation*, vol. 8, no. 2, April, 1957, pp. 103–22.

Bramer, J.
Die internationale Patentklassifikation: ein Hilfsmittel fur den Dokumentalisten. *Dokumentation*, vol. 4, no. 2, March, 1957, p. 42.

Bray, Robert S.
Photocopying and copyright: a progress report. *Special Libraries*, vol. 48, no. 3, March, 1957, pp. 100–3.

Coates, E. J.
Notation in classification. *Classification Research Group Bulletin*, no. 2, March, 1957, pp. D1–19.

Concept coordination in information retrieval systems
American Documentation, vol. 8, no. 2, April, 1957, p. 149.

Dargent, J.
Quelques bibliographies internationales, 1946–1956. Brussels. Bibliothèque Royale. *Catalogue des expositions*, 4–18 *novembre* 1956, [1957], pp. 1–53.

Documentation Incorporated
Final report to the National Science Foundation on the Matrex indexing machine, by Eugene Miller. Washington, Documentation Inc., 1957. 18 pp. plates. tables. mimeographed.

Dubester, Henry J.
The catalog—a finding list? *College and Research Libraries*, vol. 18, no. 2, March, 1957, pp. 107–11, 159.

Dux, Werner
Die Verzeichnung der deutschen Hochschulschriften seit 1945. *Zentralblatt für Bibliothekswesen*, vol. 70, no. 7/8, July/August, 1956, pp. 274–82.

Evaluation of literature searching systems. *American Documentation*, vol. 8, no. 2, April, 1957, pp. 149–51.

Farradane, J.
Classification and mechanical selection. *Classification Research Group Bulletin*, no. 2, March, 1957, pp. E1–8.

Gibson, Eleanor B.
What can be learned from a library survey? *Special Libraries*, vol. 48, no. 4, April, 1957, pp. 133–8.

Great Britain. Ministry of Education
Libraries in technical colleges. London, the Ministry, 1957. 7 pp. mimeographed. (Circular 322.)

Hove, J. van
Travaux bibliographiques publiés en Belgique, 1950–1956. Brussels. Bibliothèque Royale. *Catalogue des expositions*, 4–18 *novembre* 1956, [1957], pp. 53–72.

Jackson, Eugene B.
Scientists as documentalists. *Books and Publishing* (Simmons College, Boston, Mass.), vol. 3, 1956, pp. 23–42.

Keys, Thomas E.
Changing concepts in library services. *Bulletin of the Medical Library Association*, vol. 45, no. 1, January, 1957, pp. 5–13.

Library Association. Sub-section for Colleges of Technology and Further Education
Standards for library service in colleges of technology: basic recommendations for libraries in colleges of advanced technology, regional technical colleges and those area technical colleges which have advanced full-time or sandwich courses. London, the Sub-section, 1957. 16 pp. 3*s*. 6*d*.

Lorphevre, G.
Les publications bibliographiques et de documentation éditées par l'Unesco. Brussels. Bibliothèque Royale. *Catalogue des expositions*, 4–18 *novembre* 1956, [1957], pp. 90–116.

Matthews, Sidney E.
Multiple order form slips. *Library Journal*, vol. 82, no. 5, 1 March, 1957, pp. 635–8.

Mills, J.
Classification of a subject field. *Classification Research Group Bulletin*, no. 2, March, 1957, pp. B1–22.

Mulcahey, Jasmine H.
Training special library assistants. *Special Libraries*, vol. 48, no. 3, March, 1957, pp. 105–8.

Ohlman, Herbert
Low-cost production of marginal punched cards on accounting machines. *American Documentation*, vol. 8, no. 2, April, 1957, pp. 123–6.

Osborn, Velva J.
Early developments in storage library processing. *University of Illinois Library School Occasional Papers*, no. 47, January, 1957, 18 pp.

Piel, Gerard
Science, censorship, and the public interest. *Science*, vol. 125, no. 3252, 26 April, 1957, pp. 792–4.

Postell, Paul E., *and* Pflueger, Margaret L.
Recent technical information activities of the U.S. Atomic Energy Commission. *Special Libraries*, vol. 48, no. 3, March, 1957, pp. 91–96.

Powell, Lawrence Clark
Libraries and learning: outline and bibliography for English 195, an Upper Division course intended to introduce students to the role of libraries in printing, publishing, bookselling, book-collecting, and reading. *UCLA Library Occasional Papers*, no. 5, 1956, 19 pp.

Power, Eugene
The image on the screen. *Microcosm*, vol. 3, no. 1, February, 1957, p. 4.

Ranganathan, S. R.
Library classification as a discipline. *Classification Research Group Bulletin*, no. 2, March, 1957, pp A1–19.

Richmond, Phyllis Allen
The subject Ph.D. and librarianship, *College and Research Libraries*, vol. 18, no. 2, March, 1957, pp. 123–6, 146.

Rift, Leo R.
An inexpensive transaction number charging system with book record. *College and Research Libraries*, vol. 18, no. 2, March, 1957, pp. 112–8

Schwarz, Christa
Die analytischen Allgemeinbibliographien in den Europäischen Landern der Volksdemokratie. *Zentralblatt für Bibliothekswesen*, vol. 70, no. 7/8, July/August, 1956, pp. 267–74.

Staveley, Ronald
The reader, the writer, and copyright law. *University of London School of Librarianship and Archives Occasional Publications*, no. 7, 1957, 12 pp.

Strieby, Irene M.
The problem of literature chemists in industry. *American Documentation*, vol. 8, no. 2, April, 1957, pp. 89–97.

Vickery, B. C.
Relations between subject fields: problems of constructing a general classification. *Classification Research Group Bulletin*, no 2, March, 1957, pp. C1–10.

Weber, David C.
A quagmire of scientific literature? *College and Research Libraries*, vol. 18, no. 2, March, 1957, pp. 103–6.

Woodruff, Elaine
Work measurement applied to libraries. *Special Libraries*, vol. 48, no. 4, April, 1957, pp. 139–44.

All the above items may be borrowed from Aslib Library, except those marked with an asterisk. Most of these are available for consultation in the Library, apart from a few for which locations in other libraries can be given by the Librarian.

ASLIB INFORMATION

ASLIB COUNCIL, 1957–58

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VICE-PRESIDENTS: Sir Andrew McCance, *Colvilles Ltd.*; Sir Alexander Todd, *Cambridge University*; Sir Ben Lockspeiser, K.C.B., *Tube Investments Ltd.*; Sir Wavell Wakefield, M.P.

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HONORARY SECRETARY: Mrs. Joyce Lancaster-Jones, *British Council.*

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W. Ashworth, *British Nylon Spinners Ltd.*
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SCOTTISH BRANCH REPRESENTATIVE
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Dr. H. G. Thornton

D.S.I.R. OBSERVERS
L. R. Poole
Miss Norah Sullivan

CO-OPTED MEMBER
E. J. Carter, *lately Head of Libraries Division, Unesco*

Birthday Honours

Members will be pleased to know that Mr. J. G. Pearce, Director of Research, British Cast Iron Research Association, and an Honorary Member of Aslib, was appointed C.B.E. in the Birthday Honours. Mr. G. Weston, Technical Director of British Standards Institution and a member of Aslib Council, received the O.B.E., and Mr. T. H. Messenger, Head of Library and Intelligence Division, Research Association of British Rubber Manufacturers, was listed M.B.E.

Proposed Register of Information Officers

Those members who were unable to attend the Annual General Meeting at Scarborough will wish to know the outcome of the debate on the proposed Register of Information Officers. In order to avoid concentration on questions of detail and to ascertain members' views on Aslib's role in relation to professional standards, the debate was not restricted to the Register proposals, and the somewhat broader Motion was proposed: 'That this General Meeting of Aslib favours the establishment by Aslib of some form of qualification for information officers'.

While fundamentally new arguments, whether for or against the proposals, were absent, it was generally agreed that the discussion was mature and good-natured and free of many of the irrelevancies and asperities which have characterized some earlier examinations of the subject. Miss Kyle's firm and impartial chairmanship of the meeting was, perhaps, the most important influence in securing such a welcome treatment of a difficult subject. At the close of the debate the Motion was heavily defeated.

At its meeting on 19th June the Council considered the implications of the discussion and concluded that, at present, there was in the membership insufficient support for the establishment of a new qualification by Aslib. It accordingly decided to defer indefinitely further consideration of the matter. This does not, of course, imply any discontinuance of Aslib's interest in professional training, examination, and certification—as incorporated in Aslib's Memorandum of Association—and the pursuit of members' interests in this field will continue.

Annual Report

'The Work of Aslib' will not be published this year in *Aslib Proceedings*. It will, however, appear in *Aslib Year Book 1957–1958*.

Extract from *Hansard* for Friday 7th June 1957, Col. 1,617 et seq.

During the Adjournment Debate on Scientific Information Services, Mr. F. Willey (Sunderland, North) said:

'Apart from the technical side of this matter, we have to do more to ensure that this information is known and appreciated by industry, especially the small firms. I am very much encouraged by the work of Aslib, which, during the past three years, has had 450 people attending its courses. During the last six years I believe that the number of inquiries with which it has dealt has risen from 1,000 to 35,000 a year.

'All that is very good, but we should not rest content. We should encourage such services and, by publicity, education and other ways, improve the receptive climate within industry to the acceptance and utilization of scientific research.

'I am sure that these are matters of vital concern to British industry. I am equally convinced that the Government can do a great deal to facilitate the use of up-to-date scientific knowledge and further assist the work of organizations such as Aslib.'

Scottish Branch

Arrangements are being made for meetings in three different centres during the year. The first will be held in the autumn in Dundee and will have an industrial theme. The second will be in February in Edinburgh and will include the Annual General Meeting of the Branch. The third will take place in Glasgow and is planned to include an exhibition of library equipment. It is hoped that all Scottish members will be able to attend at least one of these meetings.

Proposed Electronics Group

A number of members have expressed a desire to form an Electronics Subject Group in Aslib. The rapid development of this industry and its increasing impingement upon other industries suggest that such a group would have plenty to do and that its work might interest many members other than those directly engaged in electronics. Members who feel that such a group might be helpful to them are invited to write to: A. R. Cameron, A. V. Roe & Co. Ltd., Greengate, Middleton, Manchester.

Copyright Act, 1957

On 21st October, Aslib is to hold an evening meeting to explain and discuss the effects of the new Copyright Act on document copying in libraries of various kinds. A statement is being drawn up for the guidance of members, but it is considered desirable to defer distribution of this until after the meeting. There will thus be an opportunity to incorporate any new points which may emerge from the discussion and to obtain legal opinion on the document as a whole before it is distributed.

Textile Information Course

With the intention of assisting those members of textile firms who could be assigned to undertake part-time or *ad hoc* information work, a three-day course of instruction has been arranged by the Manchester College of Science and Technology, with the co-operation of the Aslib Textile Group and the interested support of the Textile Institute. The course, which is to be held at the College on 23rd–25th September, will be staffed by experts in textile information work from the Aslib Textile Group. Topics to be covered include sources of current information, routine examination and further action on material of interest, handling of reports, methods of tracing information, assistance to be obtained from external agencies and the effective use of public and other libraries. To facilitate the attendance of nominees from other parts of the country, it is anticipated that the course will be optionally residential. Full particulars relating to the course and forms of application, which should be returned by 31st August, are available from Mr. J. C. Harrison, D.F.C., D.P.A., F.L.A., Senior Lecturer in Librarianship, Department of Industrial Administration, College of Science and Technology, Manchester, 1.

William Morris Exhibition

The William Morris Society is arranging an exhibition devoted to Morris's association with printing. Admission will be free, and it is hoped to display Morris's work on a scale not previously attempted. The exhibition will be held at the St. Bride Foundation Institute, London, during the first three weeks of August. From 19th August to 7th September it will be at Leighton House, Kensington, and from 16th September to 5th October at Manchester Central Library. Later it will go to the Mitchell Library, Glasgow, and will then tour northern Europe under the auspices of the British Council.

Colon Classification

In the preface to the fifth edition of his *Colon Classification* Dr. S. R. Ranganathan announces a changed form of publication for this important work. In future it will be issued in two volumes. The first volume will contain the main tables elaborated in sufficient detail for use for book classification in a general library. This volume, known as the Basic Classification, is now available, and is published in this country by G. Blunt & Sons, price 36*s*. The second volume, which is intended to contain further extensions for use in detailed documentation work in special libraries and abstracting services, will be issued in parts as the extensions become available; thus the classification programme will be similar to that of the U.D.C.

Holdings of Professional Periodicals

The North-eastern Division of the Association of Assistant Librarians has issued a *Union list of professional periodicals*. It lists the holdings of twenty-seven libraries including public, university and special libraries and the library of the School of Librarianship at Newcastle. This list illustrates the difficulties of students in seeing the important library periodicals, especially those devoted to research. There is no location for *American documentation* or *Special libraries*, and only one each for *ACRL monographs, Annals of library science, College and research libraries, Journal on cataloging and classification* and *Library trends*. Even more serious, there is only one location (Darlington) for *Library literature* up to 1952, and none for later numbers.

This union list, besides helping students to find periodicals, may also spur librarians in the regions to fill these gaps by co-operative effort. The list can be obtained, price 6*d*., from K. Davidson, Esq., A.L.A., County Branch Library, Bedale Avenue, Billingham, Co. Durham.

Library Association Printed Catalogue

The Library Association has decided to issue during 1957 a printed catalogue of its library. This contains over nineteen thousand books, pamphlets, and volumes of periodicals, and the catalogue will undoubtedly form one of the most important bibliographies of librarianship ever issued. It will be arranged by the Dewey Decimal Classification, with an author and subject index. It has been edited by D. C. Henrik Jones, F.L.A., assisted by Mrs. J. P. Palmer, B.A., A.L.A. The price of the catalogue will be six guineas, but there will be a pre-publication price of five guineas for orders received by 27th July 1957. These should be addressed to the Library Association, Chaucer House, Malet Place, London, W.C.1.

Directory of Japanese Research Libraries

Aslib library has a few copies of the *Directory of research libraries*, issued by the Special Libraries Association of Japan, available for free distribution to members in this country. The directory is printed in Japanese and English, and it has an English subject index and an index to periodical publications in both English and transliterated Japanese. Members who want copies should write to the librarian of Aslib.

The Special Libraries Association of Japan is anxious to establish exchange relations with British libraries and members interested should write to the Association c/o The National Diet Library, Tokyo.

Technical Information Service

Iota Services Limited have established a Bureau of Technical Information the object of which is to provide technical information to industry; in particular to small and medium-sized companies without library or information facilities or with inadequate sources of reference. The services fall into two categories.

1. Issue of a monthly bulletin of indicative abstracts on subjects chosen by individual subscribing members and covering any aspect of science or technology. The private bulletins will include information of forthcoming meetings, conferences, etc., as applicable to individual client's needs.
2. Compilation of comprehensive bibliographies, annotated and classified, for the specific needs of any one industry or section of industry. References included in all literature searches undertaken by the Bureau will cover books, periodicals, industrial films, specifications, patents, published and unpublished classified reports from international sources.

For further particulars application should be made to The Manager, The Bureau of Technical Information, 38 Farringdon Street, London, E.C.4.

Wilson Colour Charts

This work was commissioned in 1938 by the Royal Horticultural Society to standardize colour nomenclature in horticulture, and was subsequently adopted internationally. It is published by the British Colour Council, in two volumes. The work illustrates 800 colours and gives them colour names, derivations and history as well as horticultural examples. Some 200 copies are still available at 60*s.* for the two volumes from Wilson Colour Ltd., Burleigh House Farm Studio, Crawley Down, Sussex.

MEMBERS' ADVERTISEMENTS

MATHEMATICAL TRANSLATION. Translators of Russian or of Polish are sought to translate into English elementary mathematical material (not significantly beyond the calculus level) originally written in Russian or Polish. Fee to be arranged. Write to William H. Meyer, 415 Eckhart Hall, University of Chicago, Chicago 37, Illinois, U.S.A. When writing, indicate competence in both language and mathematics.

R. C. MURRAY, PH.D., 24 Cambridge Road, Farnborough, Hants. (Tel. Farnborough 2040.) Expert translations into English from Dutch, French, German, Italian, Russian and Spanish texts dealing with pure and applied chemistry and physics, metallurgy and biology. Please note new address.

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BRITISH INSTITUTE OF MANAGEMENT invites applications for the following senior appointment.

OD (4). MANAGER OF THE INFORMATION AND LIBRARY DEPARTMENT. The person holding this post is responsible for supervising a large and growing library and information service for maintaining contact with a wide variety of subscribers in a body of national importance for advising upon all questions concerning the collection, processing and classifying of information; the preparation of information summaries and other material for publication. The Manager is also responsible for liaison with other information services both in this country and overseas. Applicants, either men or women, should be not less than 30 years of age and must have had previous experience in a senior post of this nature. A university degree is desirable but not essential. The commencing salary will be in the range of £1,100 to £1,500. The post provides an exceptional opportunity for personal development and a widening of interests. In view of the nature of the task a good personality, drive and initiative are called for. Applications should be addressed to Director, British Institute of Management, 80 Fetter Lane, London, E.C.4, marked with the appropriate reference number.

MINISTRY OF SUPPLY. LIBRARIAN Grade IV. The Civil Service Commissioners invite applications for one pensionable post in London. Duties: General library work, including assistance to readers and the supervision of the periodicals reading room and inter-library loans. Age at least 22 years on 1st July, 1957. Candidates must have become Fellows or Associates of the Library Association, or hold the Diploma of the London University School of Librarianship. They must have had experience of library work, preferably technical. Starting salary £525 (women £520) at age 22 to £625 (women £605) at age 25 or over. Men's maximum £1,000. Women's pay is being raised to reach equality with men's pay by 1961. Promotion prospects. Particulars and application forms from Secretary, Civil Service Commission, 6 Burlington Gardens, London, W.1, quoting No. 4726/57/8. Completed applications should be returned by 30th July, 1957.

THE BOWATER ORGANISATION requires a chief information officer and librarian to join the staff at its Central Research Laboratories near Gravesend, Kent. Duties are the usual ones expected of an information officer, of helping hard-pressed colleagues to deal with the ever-increasing flow of technical literature by picking out items of specific interest, of abstracting, and producing (with the aid of a qualified assistant) an information bulletin, and of taking overall responsibility for a library which is under the immediate care of a competent assistant librarian. Desirable qualifications include experience in information and/or library work; a University degree in one or more scientific subjects; an ability to sort wheat from chaff; fluency in Swedish, German and Finnish; a knowledge of the technology of pulp and paper and their end products; and a facility for being genuinely helpful. If you are interested, please write to the Principal, Staff Administration, The Bowater Paper Corporation Ltd., Bowater House, Stratton Street, London, W.1.

WOMAN LIBRARY ASSISTANT required, preferably with experience in an engineering or scientific library. L.A. qualifications an advantage. Good commencing salary, progressive post, pension scheme, luncheon restaurant. Apply full particulars, Assistant Secretary, Institution of Electrical Engineers, Savoy Place, London, W.C.2.

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Glass Reinforced Plastics Edited by Phillip Morgan. The latest information about raw materials, fabrication techniques and specialised applications. 2nd edn. 326 pages July 45*s*. net.

Behaviour of Metals at Elevated Temperatures
Four papers read to the Institution of Metallurgists by leading authorities on different aspects of this important subject. About 120 pages August 21*s*. net.

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incorporating Aslib Information

Volume 9 **August 1957** **Number 8**

AVAILABILITY OF ATOMIC ENERGY INFORMATION

London, 3rd April 1957

A MEETING on the subject of the availability of atomic energy information and library problems connected with it was organized by Aslib and held at the Industrial Welfare Society on 3rd April 1957. Mr. B. Agard Evans, Librarian, Ministry of Works Library, was in the chair.

Introducing the speakers, the Chairman said that Mr. R. M. Fishenden, Head of the Scientific Administration Office, Atomic Energy Research Establishment, Harwell, would present the case for the Atomic Energy Authority first. He would be followed by Miss J. Binns, Librarian at the Whetstone–Rugby Library of the English Electric Company Ltd., who would speak of the problems of the librarians. The meeting would then be thrown open for discussion.

I

THE AVAILABILITY OF ATOMIC ENERGY INFORMATION

BY R. M. FISHENDEN, M.A.

INTRODUCTION

Although entitled 'the availability of atomic energy information' this paper deals principally with the library and information services offered by the U.K. Atomic Energy Authority, and a brief introductory note is therefore included on the Authority itself. It consists of a London Office and three Groups: the Research Group with its Headquarters at the Atomic Energy Research Establishment, Harwell, the Industrial Group (Headquarters Risley) and the Weapons Group (Headquarters A.W.R.E., Aldermaston). The Industrial Group includes the Authority's production factories and the Calder Hall power station, and all three Groups have a number of outstations, details of which are listed in Appendix I of the Authority's second Annual Report.[1] The use of the name London Office, rather than Headquarters, for the Authority's offices in London is an indication that its administration is largely decentralized.

In accordance with this policy, there is no central control of the Authority's libraries. There is a separate library and information service in each Group, and their activities are co-ordinated where necessary through a Library and Information Services Co-ordinating Committee. The Chief Librarians of the Groups are:

Research Group	Miss M. Gosset
Industrial Group	Mr. J. Roland Smith
Weapons Group	Mr. P. D. Friend

If you are ever in doubt about who to approach with a particular inquiry any one of the three would pass it on to the appropriate Group for answer.

The Authority's Public Relations Department is a centralized service under the control of the Director of Public Relations, Mr. E. H. Underwood, whose office is in St. Giles Court, London, W.C.2.

THE AUTHORITY'S PUBLICATIONS POLICY

The Authority publishes scientific and technical information in two principal ways, first through the normal medium of scientific and technical journals, in which hundreds of articles appear every year, and second in the form of unclassified reports. ('Classified' is used here in the security rather than the library sense.) Two kinds of unclassified reports are publicly available:

a. Those sold through Her Majesty's Stationery Office.
These are identified by the price which appears on the front cover, and a list of H.M.S.O. sales offices on the back.

b. Those freely available, but not on sale.

Reports of both kinds are sent to overseas atomic energy projects with whom the U.K.A.E.A. exchanges reports and are placed in the depository libraries in the United Kingdom shown in Table I. The dates indicate when the first reports were sent to each library.

TABLE I

LIBRARY	REPORTS RECEIVED FROM ISSUING AGENCY SINCE DATES SHOWN			
	British			*American*
	R.G.	I.G.	W.G.	A.E.C.
Science Museum Library, London, S.W.7 Central Library, Surrey Street, Sheffield	1952	Nov. 1955	June 1957	1952
Central Library, Ratcliff Place, Birmingham, 1 Mitchell Library, North Street, Glasgow, C.3 Central Library, William Brown Street, Liverpool, 3 Central Library, St. Peter's Square, Manchester, 2 Central Library, New Bridge Street, Newcastle, 1	Nov. 1955	Nov. 1955	June 1957	Mar. 1956
Central Library, High Street, Acton, W.3 Central Library, College Green, Bristol, 1 Central Library, Albion Street, Kingston upon Hull Central Library, Calverley Street, Leeds, 1 Department of Industrial and Forensic Science, Vernon Street, Belfast, N.I.	Nov. 1956	Nov. 1956	June 1957	Jan. 1957

ATOMIC ENERGY INFORMATION

Some papers intended for publication in journals or books are first issued as unclassified reports: these are marked 'Approved for publication' and are not publicly available. This restriction is necessary in order to protect the author's publication rights.

Questions are often asked about the reference numbers used on Research and Industrial Group reports, and a guide is in preparation which will give a full description of both Group series.

LISTS OF AUTHORITY REPORTS

The most important list of Authority publications is the monthly list of publications available to the public. This is issued from Harwell and copies are available on request. It includes articles by Authority staff in scientific and technical journals, books, translations and reports (but not those reports referred to above which are to be published in journals). An annual cumulation is to be prepared and that for 1956 will be issued shortly.[2]

Authority reports on sale from H.M.S.O. are also listed in the British National Bibliography and in H.M.S.O. lists of Government publications, and a number of cumulative lists of past A.E.R.E. reports and publications have been prepared. Table II below indicates the period and types of publication covered by each list.

TABLE II

Lists issued by the Authority

PERIOD COVERED	ISSUING GROUP	PUBLISHED PAPERS LISTED IN	REPORTS FOR SALE LISTED IN	REPORTS NOT FOR SALE LISTED IN
1946–June 1951	R.G.	*Harwell*[1]	A.E.R.E. Inf./Bib. 96[2]	—
June 1951– *Aug 1954	R.G.	A E.R.E. Inf./Bib. 96	A.E.R.E. Inf./Bib. 96	A E R.E. Inf./Bib 110[4]
Aug. 1954– Dec 1955	R.G.	A.E R.E. Inf./Bib. 96[3] Suppl. 1	A.E.R.E. Inf./Bib. 96 Suppl. 1	A.E R.E. Inf./Bib 110
Dec 1955 onwards	All	U K.A.E.A. List[5]	U.K A E.A. List	U.K.A.E.A. List

In addition to these report lists both Research and Industrial Group Libraries regularly issue Accession Lists and Information Bulletins. These are available, free of charge, on request to each Group.

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* Dates shown are approximate.

[1] Harwell: The British Atomic Energy Research Establishment. H.M.S.O. 1952. 6*s.*

[2] A.E.R.E. Inf./Bib. 96. A list of reports and published papers by A.E.R.E. staff. H.M.S.O. 1954. 7*s.* 6*d.*

[3] A.E.R.E. Inf./Bib 96. Supplement 1. A list of reports for sale and published papers issued between August 1954 and December 1955. H M.S.O. 1957. 5*s.* 9*d.*

[4] A.E.R.E. Inf./Bib. 110. A list of unclassified reports, January 1952 to December 1955. H.M.S.O. 1957. 3*s.* 9*d.*

[5] U.K.A.E.A. List of publications available to the public. Harwell, A.E.R.E., December 1955 to date (monthly). Gratis.

ABSTRACT SERVICE

The U.K.A.E.A. does not issue an abstract journal, but has arranged for abstracts to be included in *Nuclear Science Abstracts*. Copies of its reports are sent to Oak Ridge by air so that abstracts appear as quickly as possible. Incidentally, agreement has recently been reached for reports issued by countries belonging to the European Atomic Energy Society also to be included in *N.S.A.*

Unclassified reports from the Industrial and Research Groups are sent in addition to the abstract journals listed in Table III.

TABLE III

Abstracting journals to which reports are sent

Journal	*Unclassified Reports sent by.*	
	Research Group	*Industrial Group*
Science Abstracts	All	All
Analytical Abstracts	Chemistry only	All
Journal of Applied Chemistry	All	All
Chemical Abstracts	All	All

OVERSEAS REPORT EXCHANGES

The Authority exchanges unclassified reports with the official atomic energy projects in a considerable number of other countries. In the case of the United States our reports are also sent to depository libraries, and Canadian and United States reports are sent to United Kingdom depository libraries. It is hoped that this arrangement will be extended to reports from other countries.

In addition, individual Groups have made a number of independent exchange arrangements with overseas scientific organizations of various kinds.

THE PUBLICATION OF OLDER DOCUMENTS

The technical security policy of the United Kingdom is based on a *Declassification Guide*, which is used jointly in Canada, the United Kingdom and the United States. The *Guide* is revised at periodic conferences, and during the last two years it has been found possible to make substantial relaxations. This in turn has made it possible to 'declassify' many old documents, i.e. to remove the security restrictions on their publication. During the last few months the Authority has been undertaking a review of these old documents, of which there are many thousands. This review has also had to take account of the Authority's commercial policy.

The second stage of this review is to make available the documents that have been declassified. These documents are being divided into two classes, the first containing the more useful and the second those which are obsolescent or for some other reason not likely to be in much demand. Documents in the first class will be reprinted and sent out on the normal standard distribution to depository libraries and overseas projects: they will be listed in the Authority's monthly list at the time of reprinting. Documents in the second class will not be reprinted, but periodical lists will be issued, and the documents will be available for loan (within the limits set by the small numbers available) from the Authority's libraries.

This review has included reports which, although 'unclassified' at the time of issue, were not printed in sufficient numbers for distribution outside the Authority.

SERVICES AVAILABLE FROM THE AUTHORITY'S LIBRARIES

Loan services

When the Authority set up depository libraries in the United Kingdom one of the objects was to reduce the extent of borrowing from its own libraries. Hence, if reports are available in depository libraries it is the intention that they should serve outside users. However, there are in the Authority's libraries many reports not available elsewhere in the United Kingdom, including particularly reports received from some overseas atomic energy projects, and the older documents referred to above. Subject to any limitations on use imposed by the originator, the Authority will do its best to lend these reports to other users, provided that the request is made through a library.

Information services

One way in which the Authority disseminates information is to prepare and issue bibliographies on selected subjects. A list of these bibliographies was issued as a press release in October 1956 (available from Director of Public Relations, U.K. Atomic Energy Authority, St. Giles Court). Subsequent bibliographies are included in the monthly list of U.K.A.E.A. publications.

Within the limits of available effort the Authority will prepare further bibliographies in response to requests from industry, universities and other research institutions. Priority will naturally be given to subjects for which there is most demand.

REFERENCES

1 United Kingdom Atomic Energy Authority 2nd Annual Report 1955–56. London, H.M.S.O. 1956. 2s 6d.

2. A.E.R.E. Inf./Bib. 113. First annual cumulation of the U.K.A.E.A. list of publications available to the public. December 1955–December 1956. H.M.S.O. 1957.

II

THE NEEDS OF LIBRARIANS IN RELATION TO ATOMIC ENERGY INFORMATION

BY JEAN BINNS, B.A., F.L.A.

First of all I should like to dispel any idea of this meeting being a contest between the Authority Library and its users. On the contrary, I regard this as yet another example of co-operation among librarians to resolve common problems. In fact it is a pleasure to have the opportunity to express appreciation on behalf of other librarians in the atomic field for the help which the Authority librarians have so generously given to us during the last few years. Assistance has always been lavish—we have received loans of reports and other documents, gifts of Book Lists and Information Bulletins, advice on classification schedules and, above all, help in information work, ranging from the checking of obscure references to full-scale bibliographies for subjects on which the published literature yielded no reference. Without drawing on the resources of the U.K.A.E.A. libraries, a year or so ago non-Authority atomic libraries would have been able to give only a poor service, and even now when, with growing stocks and records, they are able to reciprocate at times with loans and gifts of bibliographies completed, they are still dependent on the Authority librarians for the supply of information available only via Harwell or Risley, in particular British atomic reports, classified and unclassified.

This meeting has therefore been called so that the Authority might discover if libraries outside the Authority are experiencing difficulties which may render their work less effective. I was asked to raise here on behalf of these libraries any queries which might be aired, discussed, and answered by the Authority to the benefit of all concerned. In order to collect the necessary material for this meeting I circulated librarians, public, industrial and institutional, with interest in atomic energy. The result is that I have here a list of queries and practical suggestions which I think will prove the basis of a very interesting discussion.

GUIDES AND INDEXES TO U.K.A.E.A. PUBLICATIONS

Unclassified information

Non-U.K.A.E.A. librarians feel the lack of guides and indexes to British unclassified information. In fact at present it seems comparatively easy to locate United States unclassified information whether by author, subject or serial number by using *Nuclear Science Abstracts*, whereas there is difficulty in finding what has been published on atomic energy in this country.

Extension of number of guides

The present position regarding existing guides has been stated recently by Mr. L. J. Anthony in 'Sources of information on atomic energy' (A.E.R.E. Lib./L.1). This shows that the coverage of unclassified documents is now as follows:

A.E.R.E. Unclassified reports. 1952–
,, Published papers written by the Staff. 1946–
,, Translations. 1946–
Industrial Group. Unclassified reports. Dec. 1955–
,, ,, Published papers by the Staff. Dec. 1955–
,, ,, Translations. Dec. 1955–
A.E.R.E. and Industrial Group. Bibliographies. 1946–

Apparently there are not yet guides to the following:

A.E.R.E. unclassified reports prior to Dec. 1952.
Industrial Group unclassified documents prior to Dec. 1955.
Industrial Group published papers of the Staff prior to Dec. 1955.
Industrial Group translations prior to Dec. 1955.

More detailed indexes to guides

Librarians, since they may have to locate reports knowing only author, serial number or subject, have noticed the lack of detailed indexes in the guides so far issued by the Authority. It is understood, however, that the latest guides now in the press are arranged under broad subject-headings and contain author and serial number indexes. These publications are:

A.E.R.E. Inf./Bib. 110. List of A.E.R.E. unclassified reports. 1952–Dec. 1955.

U.K.A.E.A. List of publications available to the public. Annual cumulation, 1955–56.

The regular issue of the latter publication will provide annually in one volume a complete list of all U.K.A.E.A. unclassified publications, in which authors and report numbers may be checked. It will, however, be less easy to check for information by subject, and therefore the additional aid of a detailed subject index as in the annual volume of *Nuclear Science Abstracts* would add considerably to its value. For the same reason a detailed subject index to the next edition of Information Bib. 110, and to the guide to Industrial Group pre-1956 publications, if and when issued, would be welcome.

Indexes to classified documents issued to 'Access Agreement' concerns

Industrial librarians would find valuable a cumulating index of the security classified papers supplied to their concerns under agreement with the Authority. Such a list would be of particular assistance to librarians appointed some time after the agreement, who might need to check that all the reports issued by the Authority were in fact handed over to them for safe keeping.

AVAILABILITY OF REPORTS FOR RETENTION

I was going to raise here the question of the printing or microcarding of unclassified documents not available for sale. This point, however, has already been satisfactorily covered by Mr. Fishenden.

METHODS OF DISTRIBUTION OF REPORTS TO INDUSTRIAL 'ACCESS AGREEMENT' CONCERNS

It is a general complaint of librarians in industrial concerns having access agreements with the Authority that reports for retention are sent to individuals, who may not notify the librarians that they have received them. The consequence is that the items are not indexed by the librarian, whose information service suffers accordingly. The ideal arrangement would be for an additional copy of all documents issued by the Authority to a concern to be sent to the library, where one is established. Failing this, however, the librarian might be made the nominated custodian of documents, so that all reports for individuals would be routed via the library and so recorded. If even this is not possible, it would be some help to the librarian if he were to be notified that copies had been distributed and to whom.

AVAILABILITY OF NON-BRITISH REPORTS

It may be outside the scope of this talk to mention non-British publications; but on receipt of my circular letter some librarians have raised the question of United States and European literature, and it is possible that the Authority can give some assistance in resolving the undermentioned problems.

U.S.A.

Loans. Non-U.S.A.E.C. items listed in N.S.A.

Mr. Colehan, Sheffield City Libraries, has pointed out that he has experienced difficulty in obtaining non-U.S.A.E.C. reports which are listed in *Nuclear Science Abstracts*; for example, reports issued by American universities, industrial concerns and institutes, such as the Illinois Institute of Technology or the Naval Medical Research Institute. Mr. Colehan suggests that a directory of the holdings of these non-official reports in this country might be compiled; and that the depository libraries between them might undertake to hold all non-U.S.A.E.C. documents appearing in *Nuclear Science Abstracts*.

Full-size AEC documents: purchasing

Librarians who require to purchase full-size U.S.A.E.C. documents find that weeks elapse between order and supply through usual sources. It has been suggested that a central purchasing agency could be set up in this country, which might reduce delay by holding stocks of U.S.A.E.C. documents.

Microcards

Librarians who subscribe to a complete set of microcards of U.S.A.E.C. documents have complained of the delay in supply. The latest received are those for January–June 1956, which reached this country in November. For those librarians who rely on microcards to satisfy requests for items occurring in *Nuclear Science Abstracts* the time lag is too great, a monthly supply of cards being preferable. It is wondered whether the Authority would negotiate on behalf of librarians with the U.S.A.E.C. on this point.

EUROPEAN

Loans

The reports of the Dutch/Norwegian Joint Establishment, some C.E.R.N. and the French Atomic Energy Commission are now being listed in *Nuclear Science Abstracts*. Librarians would like to know if the Authority is to be the only loaning source for these documents or are any of the depository libraries going to hold stocks of them.

Purchase

The Central Agency suggested for the purchase of U.S.A.E.C. documents might also handle European atomic documents, which might prove difficult to obtain direct from continental publishers.

Indexes

In his report A.E.R.E./Lib./L.1 Mr. Anthony mentions a card service provided with reports of the French Atomic Energy Commission. Librarians would like the Authority to give more information concerning the service, such as whether the cards carry classification symbols and whether they are available for purchase.

CLASSIFICATION

Availability of U.K.A.E.A. schedules of U.D.C.

The Authority libraries have supplied industrial librarians with U.D.C. extensions of the schedule 539.1 and 621.039 held at Harwell and Risley. These schedules are now approximately two years old and it is queried whether later editions are in preparation, and if so, would they be made available.

Catalogue cards

It has been suggested that the Authority might issue on a commercial basis sets of 5 in. × 3 in. catalogue cards with reports bearing U.D.C. numbers, so that librarians should not have to duplicate the effort already made in the Authority library to classify and catalogue reports. However, it is doubtful whether a depository library would need to purchase these cards if the printed subject guides already discussed are made available; but librarians in industry would probably require them, for inclusion in their comprehensive card indexes to atomic information. In any case, they would probably be prepared to pay for cards issued with classified reports, which would not be indexed in any published guide and would have to be fully catalogued and indexed in any case.

Classification Discussion Group

Librarians in industrial non-U.K.A.E.A. atomic libraries seem to find subject classification of information one of their most difficult problems, probably because new knowledge is for ever outstripping the schedules. It would benefit these librarians to be able to meet at regular intervals with the expert classifiers in the U.K.A.E.A. libraries to receive assistance on the placing of new subjects in the U.D.C. schedules, to discuss the difficulties arising in the use of U.S.A.E.C. subject-headings, and to consider the development of new schemes of classification along 'faceted' lines.

Publication of alphabetical subject index to U.D.C.

The suggestion has also been made that librarians who have not access to the U.K.A.E.A. U.D.C. schedules, or who have difficulty in apply them, might find the publication of the alphabetical subject index to U.D.C. at Harwell an immensely valuable tool.

BIBLIOGRAPHIES AND TRANSLATIONS

As non-U.K.A.E.A. libraries in the atomic field develop they are starting to issue their own publications, not only bulletins but also bibliographies and translations. It might therefore be useful if the Authority, or one of the industrial librarians, undertook to make a card index of those publications, provided they are non-confidential, so that it could be checked by other librarians before embarking on lengthy literature searches.

TRAINING OF LIBRARY STAFF

Librarians with immediate interest in atomic energy would find it good experience if they or members of their staff could be offered weekly periods of training at either the Harwell or Risley Libraries. In exchange it might be useful for less senior assistants in the Authority libraries to spend short periods in industrial or depository libraries to acquire first-hand knowledge of their problems.

DISCUSSION

MR. DOBSON (Manchester Technical Library) said he wished to repudiate a suggestion which Miss Binns had made on behalf of librarians. She had suggested that the reports issued by the Atomic Energy Research Establishment should in the future be issued in the form of microcards. As the librarian of one of the depository libraries, he had continual trouble with microcards. His own library had a full battery of readers which people could use in connection with microcards if they cared to call at the library, but innumerable requests from firms to borrow records were received, and a letter then had to be sent to the firm, asking if they had a reader. Various experiments had been tried, such as putting the microcard in the reader and trying to take a contact photograph, and the photographic department had also tried to take a small photograph of the microcard and photostat it, but the result had been completely unsatisfactory. He would plead that there should be no more microcards.

MR. FISHENDEN, in reply, said he would deal with the question along with that raised by Miss Binns with regard to making available the old reports. The Authority had indeed thought long and seriously of the best way of reproducing the old reports, and had considered micro-methods. There had been absolutely no doubt as to which the customer would prefer: nobody would want microcards if they could have a full-size copy, and fortunately the costing information available showed that the economies of using micro-methods were only marginal, and so that had led to the decision to reproduce, if at all, in full-size copies.

MR. FIRTH (Rolls-Royce Library) said he could expand the information given by Miss Binns a little further in the wrong direction on the question of U.S.A.E.C. reports on microcards. He had recently had word from the Microcard Foundation in America that the U.S.A.E.C. had not yet released to the Foundation any reports since June of last year, so that anyone present who, like himself, had been eagerly awaiting each post, hoping for some of those reports to come in, would know just what they were in for. During the interim period he had accumulated several hundred requests from *Nuclear Science Abstracts*.

MISS GOSSET (A.E.R.E.), in reply, said that she had not experienced any hold-up. As Mr. Anthony was going to Oak Ridge very shortly, he might try to find out what was happening. The Authority got its microcards direct from the AEC. One of the reasons for the hold-up might be that the abstracting for *Nuclear Science Abstracts* was done simultaneously with the reproduction of the report for microcards and, if there was any hold-up in the production of the cards, the entry in *N.S.A.* would come out well ahead of the cards.

MR. BALL (Liverpool Public Libraries) said germane to that point was the fact that when his library first got their batch of reports and microcards from the Atomic Energy Commission it was found that the printed reports, despite having been delayed on the way, were at least four months earlier than the comparable microcards coming through from the Atomic Energy Commission. That gave some idea of the minimum transit delay in receiving the microcards: it was, in fact, an appreciable delay and not just a temporary one.

MR. P. COLEHAN (Sheffield City Libraries) said they had heard from the manufacturers and the retailers of the reports and he wished to speak on behalf of the wholesalers, the depository libraries of this country. Some of the problems which he had been facing recently had been mentioned by Miss Binns, and notably he would like to get an answer to the problem of finding reports which were listed in *Nuclear Science Abstracts* but which were non-British reports. People imagined that depository libraries could get pretty well anything listed in

Nuclear Science Abstracts. Librarians did not like to discourage such belief and tried to give a good service, and if they could not supply the report they at least liked to tell the people where it could be obtained. So often they came up against the problem of not being able to give advice as to where a report could be obtained, other than to suggest that Aslib should be approached, and quite often Aslib came back to them and asked if they could help! There should be some list or index which would help depository libraries to indicate to readers just where they could get those things.

Secondly, he wished to know if Harwell in particular could speed up their service back to the libraries, because at the present time there was a fair delay.

Mr. Colehan said the depository libraries had to take the criticisms from readers. The only thing the libraries could say was that they had applied to Harwell and the matter rested there. As the depository libraries had to face the public, it would be helpful if they could give some sort of reply to any such criticisms.

MISS GOSSET replied that, in the first place, it should be recognized that *Nuclear Science Abstracts* was primarily a journal for the United States Atomic Energy Commission. It was really their accession list and was intended for the libraries in their various organizations. Therefore in *N.S.A.* an enormous number of reports were listed which the AEC got from institutions, universities, and firms acting under United States Government contract, i.e. they might be with army contracts, naval contracts or air force contracts. Although the reports were unclassified they were still only available on a need-to-know basis. The Authority was supplied with some of them but was not allowed to lend them outside, and only the official recipients, such as the Admiralty, the Air Ministry, the War Office and the Ministry of Supply, could supply firms, and then only on a need-to-know basis. The Authority was perfectly ready to tell people whether particular documents were such, and who would be likely to help in this country, but it was not allowed to lend them.

With regard to delays at Harwell, two people only were working on the loans of unclassified reports, and something like 1,500 documents were lent outside the Authority every month. They were running about three weeks late at the present time and all they could do was to ask for indulgence.

The CHAIRMAN, referring to *Nuclear Science Abstracts*, asked whether it was possible to judge from the contract number who had issued the report.

MISS GOSSET replied that, while the contract numbers did identify the sponsor of the contract, they were not always self-evident and knowledge came only with experience of handling the documents.

MR. OLDAKER (Tube Investments) said admittedly information was received concerning translations but it was not received early enough to prevent them making their own translations from time to time, and he wondered whether some information could be given when the translation was about to be started rather than after completion.

MISS GOSSET, in reply, said that the moment Harwell began a translation Aslib was notified.

MR. J. ROLAND SMITH said that also applied to the six libraries of the Industrial Group centred on Risley.

MR. FIRTH (Rolls-Royce), referring to the classified AEC reports which were received at Harwell, said he knew they could not be sent out on loan, but if one came down would it be possible to see a list of them in order to ascertain if there was anything in one's particular field, and, if so, was it possible to ask permission to examine it?

MR. FISHENDEN, in reply, said it was a rather difficult question which involved the conditions on which the U.S.A.E.C. supplied the Authority with classified reports. If a particular case cropped up the best thing to do would be to write and ask the Authority what information was available on a particular subject; whether or not it could be passed on would depend upon the relation between the Authority and the organization in that case.

MR. HOGG said there was a system within the Industrial Group and at Harwell whereby, if there were doubts about a case, quite senior officers considered it and made a decision. In other words, the interpretation of all agreements was not done at any junior level.

Referring to the question of information going through firms' librarians to the people concerned, the position as far as his Group was concerned was that if they received a request for an existing report it was routed through the firm's library to the appropriate person in the firm. For *new* reports the terms of reference for classified information were that, because it was classified, there was a distribution list, and it was up to the librarians in the firms either to persuade the persons on the distribution list to ask the secretaries of the appropriate committees issuing the reports to put them on the distribution list, or to ask the persons on the distribution list to have the reports routed through them. Provided it was instructed so to do, Risley Library was quite willing to route a document through the firm's library to the ultimate recipient, but there had to be an assurance that that person received it, as every classified document had to be accounted for. A library was not an individual, which was one of their difficulties. He felt that the librarians in the firms should fight their own battles.

MR. FISHENDEN added that such was also the case with Harwell, and some reports on initial distribution did go to individuals. He sympathized with the librarians, because the Authority had the same trouble internally of keeping track of documents going to individuals, but in the last resort it depended on the strength of the librarian in each organization: if there was a strong librarian, then everyone would co-operate to ensure that the library had a record of all information in the establishment.

The CHAIRMAN said it was certainly most regrettable when people asked to borrow the report that they had had before and the librarian had never heard of it.

MISS NORMAN (Messrs. Foster, Wheeler Ltd.), referring to the documents in *Nuclear Science Abstracts* which were listed as being in the depository libraries, asked whether Mr. Fishenden could say what the time lag was between the *Nuclear Science Abstracts* and the documents being received in the depository libraries. She was thinking in particular of the Science Museum Library, to which she usually applied, and they invariably told her that they had not got the documents.

MISS GOSSET asked whether there was anyone present from the Science

Museum Library, and expressed the view that they were the only people who could answer that question.

MISS NORMAN added that she had received a note from Mr. Thompson, of the Science Museum Library, to the effect that they did not have them all.

MISS GOSSET, in reply, said it was for the Science Museum Library to take the matter up with the AEC. It was nothing to do with the Authority, which had only conducted the preliminary negotiations.

The CHAIRMAN asked Mr. Fishenden and his team to deal with any outstanding questions which had been raised by Miss Binns.

MR. J. ROLAND SMITH said Miss Binns had remarked that there were no complete guides extant to Industrial Group unclassified reports prior to December 1955. That meant that the only complete guide which did exist after that date was the monthly list of U.K.A.E.A. publications available to the public, for which a cumulation was going to be published very shortly. The facts were that there were very few unclassified reports issued by the Industrial Group before December 1955, and therefore if a guide were to be produced it would hardly be worth the effort. However, as Mr. Fishenden had stated, there was at the moment a declassification programme in progress which was operating in both the Research Group and the Industrial Group, and as a result he felt sure there would be a considerable number of unclassified papers available for issue from the Industrial Group. Such papers were going to be sifted and sorted in the same way as those of the Research Group. In other words, those which were plainly purely of internal interest (such as a report on methods of maintenance of the boiler plant in one of their works) would be placed on one side, but those which were concerned with nuclear matters would be looked at and would be republished in the same way as those of the Research Group.

Mr. Fishenden had said, and it applied equally to the Industrial Group, that any documents which were reprinted would be listed in the U.K.A.E.A. monthly list and would, of course, be distributed to depository libraries. Those which were of purely internal interest would not be reprinted and would not appear in the U.K.A.E.A. monthly list but in separate lists of classified documents, from which those people who wanted them could ask for them. These reports would either be lent or an attempt would be made to supply them from stock, or to provide photocopies.

He felt that, by means of the lists mentioned, interested people would know what reports were available fairly quickly. The lists were, of course, mainly chronological, and he would consider whether or not to issue subject-indexed lists of Industrial Group unclassified reports at a later date. It was felt, however, that the most important thing to do was to get the useful reports declassified and reprinted.

Miss Binns had also referred to subject-indexed lists of classified reports. She was referring, of course, to reports available to those firms having agreements with the Authority, under which the latter contracted to supply them with the information necessary for them to be able to conduct their industrial programme. The agreements which were drawn up were quite strictly limited to the subject matter of the agreement. If the agreement was, as at the moment, for the development of gas-cooled graphite moderated thermal reactors, information relevant to that subject was available to accredited representatives of such firms, and any lists that the Authority might make of such reports for them would be strictly confined to that subject. Such selected lists did in fact exist. The Industrial Group issued, in February 1955, a bibliography, 'Risley Report No. 7008', of which Miss Binns should have a copy, bearing the title 'Gas-cooled graphite moderated thermal reactors'. A supplement (IGRL–IB/R–5) was issued on 23rd July 1956, and intermediately between the publication of the first list and the supplement and subsequent to it there had been issued periodically what were known as 'Reports Lists B'. Reports Lists B were eventually cumulated in further supplements to the first bibliography. Miss Binns presumably wanted a cumulation of all this material with a subject-index, and he promised to consider this.

MISS GOSSET said she ought possibly to explain that when the Authority put out A.E.R.E. Inf./Bib. 96 Harwell Library was very short of trained staff and they had just got out something and thought they were really rather good in doing it! The supplement had been done in the same way because it would be thought better to have the supplements following the style of the original. They now had more help and hoped always to provide author and serial indexes to compilations. They were not quite sure that the really immense amount of effort required to make a subject-index was justified, and the number of reports in each subject was not large. It was possible to lose information by indexing it too much, and if people relied on indexes they might never find anything at all!

MR. ANTHONY remarked that there were not more than about twenty reports per subject-heading.

MISS GOSSET drew attention to the fact that A.E.R.E. unclassified reports were in *N.S.A.* and had been even before the depository libraries scheme started.

MR. ROLAND SMITH said the Industrial Group reports were not included until the depository libraries scheme began in 1955.

MISS GOSSET said that declassification had begun in 1947 and A.E.R.E. reports were sent to H.M.S O., which microfilmed them and sold enlarged prints. Lists of these were issued as supplements to H.M.S.O. Daily Lists No. 202 of 16.10.47, No. 4 of 6.1.48, No. 136 of 14.7.50 and No. 151 of 3.8.51. American reports were treated similarly. As far as she knew, the lists and reports were still available from H.M.S.O.

With regard to the U.D.C., very few amendments had been made to the 539.1 section because the whole effort had gone into trying to work out new schedules, which they hoped would be issued in the foreseeable future.

MR. TERRY (A.E.R.E.) said that the B.S.I. Committee were working on a new 539.1 schedule, which would bear little relationship to the one at present in use. About one-half of it was ready, and it would perhaps be complete, with a P.E. note, by the end of the year.

MISS GOSSET said that as regards the Reactor Section there had been an intermediate period when they had produced a schedule which they called the R4 schedule because 621.039.4 was represented by R4, and they had tried it out before inflicting it on the public at all Groups were now collaborating in getting out a new and improved schedule. A trouble was that there were a good many people who had to agree, but when agreement was reached it was the intention to get an alphabetical index to both the 539.1 and the reactor schedules, which would probably be reproduced because they were under contract to give it to other people. The selling of it was a little difficult, because if it was called 'U.D.C.' the copyright was vested in the F.I.D., but when it was ready that hurdle would be met and they would try to make it available. Any decimal classification was covered by copyright in this country.

The suggestions made by Miss Binns were tied up with the production of the new schedules. It was hoped in the not too distant future to issue cards with reports. Miss Gosset added the remark that the French had their own classification.

MISS BINNS asked whether it was essential to have a decimal classification and MISS GOSSET replied that they could not contemplate changing from it in the Authority at this time.

MR. HOGG, dealing with the question as to whether the Authority could take into its own libraries staff from outside for a period of training, said that, from the point of view of his own Group, it would be rather difficult, although it was possibly a matter which depended upon the individual libraries. In Risley Library no distinction as to storage was made between classified and unclassified reports, so it would mean that anybody who was let loose there would have access to all the information. Clearly that could not be permitted, and so it would be impossible to take people in for a period of training. That did not mean that Risley would not welcome visits from people interested in library documentation and techniques: that would involve only a day, or perhaps two days.

MR. FISHENDEN said the state of affairs in the Research Group was very similar. They would try to take people for a day or so, but to take them for a long period of attachment would be rather more difficult. They would certainly consider any such proposal, but could not promise that anything could be arranged.

Several points had been raised about non-British reports but he was afraid that in most cases the Authority just did not have the answer.

MISS GOSSET said she had now received replies from most of the European projects and they had agreed in principle to deposit in some of the British depository libraries, but they had not all agreed to deposit in all and they had not all said in which!

MR. FISHENDEN said there was a final point about purchasing documents, and he did not really see how the Authority could help over that. He would have guessed that it was not a commercial proposition for anyone to stock up with thousands of overseas reports on the offchance of selling one or two, and the only solution was to try to improve the ordinary commercial channels for the purpose. There was no doubt that over the last year or so H.M.S.O. had shown considerable interest in getting established in the atomic energy field, and it was possible that if they were encouraged with commercial inquiries they would do something in the matter. The Authority got its service on an exchange basis.

MR. E. H. UNDERWOOD said he had been asked to come to the meeting as representing the Public Relations Branch of the Authority, which was situated in London, and it might be useful if he explained the kind of information which was obtainable from his Branch and which could not normally be obtained from the libraries in the Groups. Any requests for information which properly should have gone to the Groups were passed on very quickly indeed, but the Public Relations Branch did have certain kinds of information which might from time to time be of interest. For example, they could supply the texts of any Press releases which the Authority might have made, which covered a wide range of subjects, and they usually had the texts of the more important speeches which had been made, either in this country or abroad, by people like Sir Christopher Hinton, Sir John Cockcroft, Dunworth, and so on.

Also very recently there had been originated a monthly bulletin called *Atom*, which contained the more important speeches, usually verbatim but sometimes very slightly summarized. It also contained the month's Press releases, Parliamentary questions, and usually the latest collection of patent abstracts. Anyone who wanted to obtain that bulletin should get into touch with the Public Relations Branch and the necessary arrangements would be made.

The Branch had also built up in the last couple of years a fairly extensive photographic library, in which there were three to four thousand photographic prints covering most aspects of the Authority's work, and if there was anything which they did not have they usually knew where to find it in the Groups, which also had their own photographic libraries.

In addition a number of publications were produced of a less specialized kind than those with which the meeting had been mainly concerned. There was, for example, an illustrated book on Harwell, so that if anybody had a demand for that type of publication his Branch could supply it, although Harwell also had it, quite naturally.

Although at the moment they were 'lodgers' of the Ministry of Supply in London, next spring they hoped to move into a new building in Lower Regent Street, and it was their plan to have there an information room open to the public, with an inquiry desk which they hoped to man with a librarian from one of the Groups, and it was the intention to have there at least one copy of all the unclassified papers which were held in the Authority, so that for those who were in the London area it might well be that the existence of that office might be of some help. It was not the intention at all to usurp the proper functions of the Groups, but it was hoped that the existence of that inquiry point might on occasion make it easier for the inquirer to find out which of the Groups and in what circumstances he should approach for what he wanted. The inquiry point would probably not interest librarians very much because they would know the correct routes for getting what they wanted, but some of the people who approached them for information might get on to the right route more easily by using that inquiry point.

MISS BINNS, summing up, said that on the previous day she had made a literature search on behalf of an engineer, which resulted in the location of several United Kingdom Atomic Energy Authority reports. These she had presented to the reader, who commented, 'This is fine, but how do you know you have covered everything?' She then had to admit that, although she had checked the indexes to British atomic reports available to her, she had very real doubts as to whether additional pertinent material did not exist in the Authority library. After hearing the answers to her questions, however, she felt that in the not too distant future non-Authority librarians would have the necessary tools to enable them to check the existence of any British unclassified document on atomic energy.

MR. FISHENDEN expressed the hope that out of the afternoon's discussions at least two points had emerged: firstly, that an attempt would be made in the future to produce information in such a form that it covered the Authority as a whole, and secondly, he hoped it had been made clear that the Authority library and information services felt it to be an important part of their job to serve all users in the United Kingdom, including people in industry and in the universities, as well as to serve the Authority itself.

The CHAIRMAN thanked Mr. Fishenden and his team for coming along in such force, for exposing themselves to questions generally, and for acquitting themselves so well. It was inherent in all that they had said that every effort was being made to get the information out to those who needed it and those who could properly use it, and obviously any requests that were passed to them would be most sympathetically dealt with.

Miss Binns had also earned their gratitude for going to a great deal of trouble in assembling the information as to the needs of librarians.

The vote of thanks was carried by acclamation and the meeting then terminated.

Subsequently, in a written communication, MR. C. J. ENDACOTT raised the following points: The pending transfer of the Public Relations Department of the Authority from St. Giles Court to Lower Regent Street was most interesting, and I should have liked to have asked the speaker whether or not it is the intention that the set of nuclear reports and papers which will be available for perusal in the information room will also be available for loan. Most large industrial firms have headquarter offices in the London area and complete design staffs of many others are situated there. The only sources of loan material in London at present are the Central Library, Acton, and the Science Museum Library. It seems certain that, as the tempo of the nuclear power programme increases, the demands on these two libraries will also increase. Engineers these days have very little time to study information away from their own desks and most of them prefer to take literature home for perusal.

There does seem a case for an additional loan service situated in such a central position as Lower Regent Street. It would be a boon to those working in central and east London who are interested in nuclear matters.

To this MR. E. H. UNDERWOOD replied: There is no present intention to introduce a loan service at the Authority's new London Office, since this would duplicate services already available from the Groups and the depository libraries. The proposal is to provide a comprehensive reference service which will act as a convenient 'signpost' for those wishing either to buy publications or to borrow them through existing channels.

ASLIB AERO GROUP CONFERENCE 1957

THE Aslib Aeronautical Group met, under the chairmanship of Mr. A. H. Holloway, on 5th April for its sixth annual Week-end Conference at the College of Aeronautics. The timing was most fortunate, as the AGARD Documentation Committee, which had been meeting in London during the week, continued its deliberations at Cranfield during the week-end.

The first meeting was a joint Aslib-AGARD discussion on the revision of those sections of the U.D.C. dealing with aeronautics Mr. Bree, Thomasberg uber Konigswinter, gave a brief review of work in Germany and Mr. Cayless, Vickers Armstrong Aircraft, described the work of the Group's Sub-Committee which is engaged on revising the schedules for 533.6. It was agreed that the B.S.I. be urged to forward the draft revision of 629 to F.I.D. for adoption.

On the Saturday morning the AGARD delegates held a business meeting whilst the Group discussed 'Aeronautical documentation in the U.K.: a survey of the present position and proposals for the future'. Mr. Haylor (Ministry of Supply Technical Information and Library Services) and Mr. Cleverdon (College of Aeronautics) gave an 'off the record' account of the difficulties encountered in the demand for and the supply of aeronautical information, both classified (in the military sense) and unclassified.

The question of the supply of unclassified material in greater quantities was referred to the Committee for consideration.

In the afternoon the AGARD delegates visited Oxford whilst the Aero Group held its Annual General Meeting. The Chairman's and Treasurer's reports were adopted and the Committee for next year was elected consisting of: Mrs. K. Bourton, IOTA Services; Miss M. Dyke, R.A.E., Bedford; Miss V. Munt, College of Aeronautics; Messrs. A. H. Holloway, Ministry of Supply; J. R. Sharp, Short Bros.; C. W. J. Wilson, R.A.E., and R. C. Wright, R.A.E. Messrs. E. Alan Baker, Ministry of Supply; A. R. Cameron, A. V. Roe; C. W. Cleverdon, College of Aeronautics; L. G. Kendrick, Hunting Percival, and F. H. Smith, Royal Aero. Soc., being members of Aslib Council, are *ex officio* members of the Committee. The meeting discussed the proposed Aslib Register of Information Officers and also the N.L.L. aerodynamic data cards.

The new committee met immediately after the meeting in order to elect officers for the year. They are: Chairman, Mr. A. H. Holloway, Ministry of Supply; Joint Honorary Secretaries, Mr. C. W. Cleverdon and Miss V. Munt, College of Aeronautics; Honorary Treasurer, Mr. C. Cayless, Vickers Armstrong (Aircraft). Editor of *News Letter*, Mr. A. Cameron, A. V. Roe.

The first part of Sunday morning was devoted to a symposium on aeronautical documentation in several NATO countries:

Canada

Mrs. Hurley, Librarian of the National Aeronautical Establishment in Ottawa, gave a brief account of the rise of the aeronautical industry in Canada which led to the expansion of the Aeronautical Laboratories of the National Research Council, the establishment of the Defence Research Board in 1947 and the creation of the National Aeronautical Establishment in 1951.

The Defence Research Board is responsible for providing the Canadian Armed Forces with the scientific research and development services which they require. It has a Directorate of Scientific Information Service (DSIS), whose function is to co-ordinate the procurement, cataloguing and distribution of scientific and technical reports required by the Board's own research establishments, the armed forces, and defence contractors.

DSIS consists of:

a. Scientific Information section with information officers in ten major subject fields of which aeronautics is one.
b. Documents section. (Issues a Documents Digest· a bi-weekly abstract bulletin in both a classified and unclassified edition.)
c. Books and periodicals library.
d. Publications section.
e. Translations section.

The Aeronautical Library is the branch library serving the National Research Council's Division of Mechanical Engineering and the National Aeronautical Establishment. It holds the largest collection of aeronautical research information in Canada and, in addition to serving the staff of its own laboratories, shares with DSIS the responsibility for the distribution of aeronautical information to the Canadian aircraft industry.

France

M. Frenot, of the Service de Documentation et d'Information Technique de l'Aéronautique, gave an account of its organization. The functions of S.D.I.T. are:

1 Searching for technical information and developing contacts with foreign countries.
2 Centralization of patents dealing with aeronautics.
3 Maintaining and developing a central library for published documents and a special library for unpublished documents.
4 Utilizing all documents received. This includes the publication and distribution of periodical bulletins.
5 Managing a translation section and co-ordinating all translations undertaken in the aeronautical field.
6 Compiling subject index cards.
7 Co-ordination, preparation and distribution of documentary studies with the collaboration of official and private specialists.
8 Reproduction and printing of documents.
9 Maintaining a film library.
10 Ordering and distributing the official regulations and publications of the French Air Ministry.

In order to carry out these functions S.D.I.T. is organized as follows:

a. Administration.
b. Patents section.
c. Information and liaison section.

d. Studies section. Has issued some 800 synthesis studies or similar works. Produces DOCAERO.

e. Documentary utilization group.

Central Library containing 300,000 documents and 2,000 current periodicals.

Special documents section.

Abstracting section.

Translations section and translations co-ordinating bureau.

f. Reproduction and distribution group.

Holland

Miss G. S. Rom, Nationaal Luchtvaart Laboratorium, Amsterdam, gave a brief account of co-operation in aeronautical information work by describing how the union catalogue at the Technical Library of the University of Delft helped the co-ordination of the supply of technical literature; and the co-operative abstracting service at N.L.L. which represented the Dutch Air Force, Department of Civil Aviation, the aeronautical industry and the air lines.

Germany, Federal Republic

Mr. Bree described the setting up of several Technical Documentation Bureaux in various fields which are responsible for the evaluation and compilation of abstracts and bibliographies in their own particular subject fields.

The Central Committee for Aeronautical Documentation (Z.L.D.)* at Munich co-ordinates the work by carrying out, at present, three important tasks.

1 Arranging for the reproduction of earlier German aeronautical reports (most of which were destroyed), the loose-leaf publication on aeronautical technology, and the publications of the German Academy of Aeronautical Research.

2 Distribution of abstracts and bibliographies. Agreements have been made with the Ministry of Supply and the Institute of Aeronautical Sciences regarding the use of their abstracts. Abstracts in English are not translated, as a working knowledge of the language is presumed.

3 A Library Information and Reference Service maintains a union catalogue (with locations) of all journals mentioned in the abstracts. There is no aeronautical library at Z.L.D. but only a working collection of essential reference works and a comprehensive set of bibliographical tools.

U.S.A.

Mr. G. E. Randall, Manager, Technical Information Branch, ARO Inc., after referring to Mr. Kenneth Lowry's paper in *Special Libraries* February 1956, gave a paper on present-day problems owing to the enormous increase in demand for aeronautical literature during the past seven years (70,000 reports requested from ASTIA† in 1951; 390,000 in 1956) and the dangers in the subsequent delay in getting information. This results in the need for:

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* Z.L.D.—Zentralstelle fur Luftfahrt Dokumentation.

† ASTIA—(U.S.) Armed Services Technical Information Agency.

1 Greater control in the creation of report literature.
2 The achievement of better initial distribution of reports.
3 The improvement of indexing and coding of report literature.
4 The establishment of the proper balance between the security and proprietary restriction on information and the research and development programme's requirement for the interchange of information.

Italy

Colonel P. Formentini, Chief of the I.A.F. Staff Information Office, Air Ministry, Rome, gave an account of the work of the CNDST (Centro Nazionale di Documentazione Scientifico-Tecnica) which operates in the CNR (Consiglio Nazionale delle Ricerche). The CNDST, which was formed in 1938, exists to:

1 Supply information regarding engineering and industry to scholars, industrialists, and all who require information.
2 Supervise the publication of an international bibliography on engineering and industry.

The CNDST, since its reorganization in 1950, carries out the following activities:

a. Bibliographical and documentation service.
b. Scientific and technical publications index.
c. Photocopying service.
d. Advice and assistance service.
e. Library service.

The I.A.F. Staff Information Office has since 1950 issued a monthly Aeronautical Bibliographical Bulletin of Abstracts from Italian and foreign literature and also a monthly Digest of Military Aeronautical Information. Both these are produced so that the material can be cut up and used as 5 in. × 3 in. cards.

The second session on Sunday morning consisted of papers by Mr. W. A. Shrader, Director of Publications, Institute of Aeronautical Sciences, and Mr. F. H. Smith, Royal Aeronautical Society, on 'Publication of Aeronautical Information'. Mr. Shrader gave a brief informal account of the publishing activities of the Institute of Aeronautical Sciences. Mr. F. H. Smith, in a dazzling pyrotechnic display (quoting among others Holy Writ, the Minister of Supply and the Archbishop of Canterbury), made a plea for the limitation of repetition and duplication, and urged that scientists should, in their own interests, reduce the number of 'prestige promotion papers' which are produced each year.

The final meeting of the Conference opened with an account by Mr. Cleverdon, College of Aeronautics, of the Aslib research project (initiated by the Aero Group) on information retrieval. Mr. Kennedy, National Research Council, Canada, Chairman of the AGARD Documentation Committee, then gave a brief review of the work of the Committee since its formation in 1953, and asked for comments as to its value, and suggestions for its future. There was little discussion. Mr. Lowry, Bell Telephone Laboratories, said that one of the indirect but most valuable benefits was that after meetings of the Committee members went back to their own countries with greater awareness of what could be done to further the aims of the NATO countries.

The thanks of the Group are due to the Honorary Secretaries and to the staff of the College who did so much to ensure that the Conference was a success.

SELECTIONS FROM THE RECENT LITERATURE

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The colonies: a guide to material and information services available to schools and to the public. London, C.O.I., 1957. 36 pp.

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[Medical bibliography.]

*ULRICH's periodicals directory: a classified guide to a selected list of current periodicals, foreign and domestic. 8th ed., ed. by Eileen C. Graves. New York, Bowker, 1956. xi, 730 pp. $22.50.

UNION FRANÇAISE DES ORGANISMES DE DOCUMENTATION
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*VEREINIGUNG ÖSTERREICHISCHER BIBLIOTHEKARE
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All the above items may be borrowed from Aslib Library, except those marked with an asterisk. Most of these are available for consultation in the Library, apart from a few for which locations in other libraries can be given by the Librarian.

ASLIB INFORMATION

ASLIB CALENDAR

SEPTEMBER

MONDAY 23rd–FRIDAY 27th. Junior Introductory Course to Information Work.

OCTOBER

MONDAY 21st. Winter meeting. Subject: The new Copyright Act.

THURSDAY 24th–FRIDAY 25th. Northern Branch conference at Chester. See paragraph below.

WEDNESDAY 30th. Conference on Library Services in Technical Colleges. See paragraph below.

NOVEMBER

WEDNESDAY 27th. Northern Branch afternoon meeting in Burnley.

Aslib Council 1957–58

Mr. Austen Albu, M.P. for Edmonton, and Mr. F. Willey, M.P. for Sunderland North, have both agreed to serve as co-opted members of the Council for the current year.

Northern Branch

The following programme has been arranged for the conference to be held in Chester on 24th and 25th October.

Thursday 24th: 6 p.m. Welcome by the Mayor of Chester, followed by 'The Industrial Development of the Chester Area' by Mr. J. M. McPeake, F.L.A., Chester City Librarian.

Friday 25th: 10 a.m. 'Information in Oil' by Mr. L. J. B. Mote, A.M.INST.PET., F.I.L. (Shell Research Ltd.), and 'Some Legal Aspects of Information Work' by Mr. V. Biske, B.SC., L.L.M., Barrister-at-Law (Lobitos Oilfields Ltd.).

1.45 p.m. Leave for visits to St. Deniol's Residential Library, Hawarden; De Havilland Aircraft Co. Ltd., Broughton; Stanlow Refinery, Ellesmere Port; or Thornton Research Centre, Thornton-le-Moors

Conference programmes and registration forms will be sent to branch members at the beginning of September for reply by 1st October. Members from outside the Northern Branch will be welcome and should apply direct to the Honorary Secretary, Miss E. Boddy, The Retreat, Tideswell Lane, Eyam, nr. Sheffield.

A number of rooms have been provisionally reserved in Blossoms Hotel, and a list of other hotels and boarding houses in Chester is available from the Honorary Secretary on request.

Efficiency of Indexing Systems

The U.S. National Science Foundation has made a grant of £10,000 to Aslib for research into the comparative efficiency of various information retrieval systems. With the increasing complexity and cost of research work, it has become more than ever necessary to minimize duplication of work previously done and recorded. The resultant need for the rapid and accurate location of information has led to the further development of existing systems and the creation of new ones, but positive evidence has been lacking as to whether, and in what circumstances, one indexing system is superior to another.

This research project will be conducted in the field of aeronautical engineering under the direction of Mr. C. W. Cleverdon, Librarian of the College of Aeronautics, Cranfield. Three indexers are to be appointed to the staff of Aslib and it is expected that the programme will take two years to complete. Some 20,000 research reports will be indexed by five different systems, and strict controls, covering time and other relevant economic factors, will be maintained at all stages of the work. When the indexing has been completed it is intended to carry out exhaustive tests on the indexes in order to show their comparative efficiency in varying conditions.

Revised L.A. Examination Syllabus

The Library Association Council has now approved in principle proposals for a complete revision of the examination system which will abolish the First Professional Examination and make the award of Associateship dependent upon the passing of a two-stage examination similar to the intermediate and final tests of many other professional bodies. It is proposed that the first-stage examination shall be an intermediate one, intended to ensure that successful candidates have an understanding of the principles and objects of librarianship in different types of library and of its place in the wider social structure. It will also test the candidates' knowledge of library practice, bibliography, and technical skills. The second-stage examination is expected to include papers on special types of libraries, libraries catering for special groups of readers, and applied librarianship in selected subject fields.

Conference on Library Services in Technical Colleges

Government plans for substantial developments in technical education, together with the recent Ministry of Education circular on standards of library service in technical colleges, call for a re-appraisal of the part which libraries can play in technical education.

To encourage this Aslib proposes to hold a whole-day conference on Wednesday 30th October 1957 at the Connaught Rooms, Great Queen Street, London, W.C.2.

It is intended to discuss the recommendations contained in Ministry of Education circular 322, dated 12th April 1957; to examine ways in which the library can be most effectively utilized as part of the teaching mechanism in technical colleges; and to discuss industry's interest in the provision of library services in technical colleges.

The following have accepted Aslib's invitation to speak:

Sir Edward Boyle, Parliamentary Secretary to the Ministry of Education.
The Rt. Hon. the Earl of Verulam, Chairman, Enfield Rolling Mills Ltd.
Mr. S. T. Broad, Deputy Education Officer for Hertfordshire.
Dr. J. Topping, Principal, Acton Technical College.
Mr. P. P. Love, Director of Research and Development, Glacier Metal Co. Ltd.

Mr. J. W. Brown and Sir Wavell Wakefield, M.P., have agreed to preside at the morning and afternoon sessions respectively.

International Federation for Documentation

The twenty-third Conference of the F.I.D. will be held in Paris from 16th to 21st September. In addition to the meetings of the Council and General Assembly there will be a joint meeting of Unesco, F.I.D. and I.F.L.A. (International Federation of Library Associations). The General Theory of Classification Committee, Central Classification Committee, and the Committee on Notation Principles will also hold meetings at the Conference, as will fourteen U.D.C. Panels.

Future Study of Documentation

To stimulate discussion about the future of documentation and new techniques for the communication of knowledge, Unesco has commissioned the following papers by Dr. H. Coblans, Head of Scientific Information Service, Centre Européenne de Recherche Nucléaire, Geneva; and Miss Barbara Kyle, Social Sciences Documentation, London:

Coblans, Herbert. 'New Methods and techniques for the communication of knowledge.' *Unesco Bulletin for Libraries*, vol. 11, no. 7, July 1957. pp. 157–75.

Kyle, Barbara. 'Current documentation topics and their relevance to social science literature.' *Review of Documentation*, vol. 24, no. 3, August 1957.

Offprints of Dr. Coblans's paper are available from Unesco, 19 Avenue Kléber, Paris 16e, and of Miss Kyle's from the F.I.D., 6 Willem Witsenplein, The Hague. Unesco hopes that the papers will be widely studied and comments sent to the Head of the Libraries Division of Unesco by the end of October 1957. Aslib proposes to comment officially on the papers, but it is also hoped that members who are interested will obtain copies and express their personal views to Unesco direct.

Council on Documentation Research

The establishment has been announced of a Council on Documentation Research in the U.S.A. Its objects are:

1. To promote understanding and co-operation among those who produce, organize and use recorded knowledge of all types and in all fields.
2. To assist in the identification and clarification of problems common to those who produce, organize and use information in diverse areas.
3. To promote research and development in documentation.
4. To encourage exchange of information concerning developments in principles, systems and equipment for the effective organization of graphic records.

Mr. D. D. Andrews, Director of the Office of Research and Development, U.S. Patent Office, has been elected President of the Council, and Dr. Jesse Shera, Dean of the School of Library Science, Western Reserve University, is the Executive Secretary.

Britain Ratifies Copyright Convention

On 27th July Great Britain formally ratified the Universal Copyright Convention which was signed in 1952. The United States is among the twenty-six other countries which have already ratified this Convention, so that works published in the United States now receive the same protection in Great Britain as works published in this country, and there is reciprocal protection for British works in the United States. In view of the sections concerning photocopying in the recent Copyright Act, this will be a most important development for many British libraries.

New Abstracting Service for Executives

The Baker Library of the Harvard Graduate School of Business Records announces the publication of a new abstracting service, *The Executive*, intended for those in leading positions in industrial management. It contains reviews of books and abstracts of important articles likely to be of interest to top executives. The fields to be covered include sociology, history, politics and business ethics. The reviews and abstracts are, in general, between 300 and 500 words in length, and the first issue, dated June 1957, contains some thirty items. The journal will be published monthly at an annual subscription of 5 dollars for the United States, Canada and the Pan American Postal Union, and 6 dollars elsewhere. Inquiries should be addressed to *The Executive*, Room 324, Baker Library, Soldiers Field, Boston 63, Mass.

National Central Library

Owing largely to the staffing situation in Central London, the Executive Committee of the National Central Library, after consultation with the authorities of the S.E. Regional Bureau and the London Union Catalogue (who are accommodated in the National Central Library building), have decided to close the Library on Saturday mornings, the present working hours being spread over the remaining days of the week. The change takes place on 31st August.

John Rylands Library, Manchester

The trustees of this library have launched an appeal for £100,000 to combat the effects of inflation and rising costs on an income which is derived almost entirely from endowment funds. The money is needed for printing, binding and repairing of MSS., etc., for provision of catalogues of the library's valuable collection of incunabula (Persian, Turkish, Syriac, Hebrew, etc.), for the remuneration of specialists employed in this work, and for the purchase of new photographic equipment and source material to be made available to students. Any sums raised through the present appeal will be added to the library's reserve fund, and will be available for the general purposes of the library. Contributions and promises may be sent to the Honorary Treasurer, The John Rylands Library, Deansgate, Manchester 3.

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Dale Electric (Yorkshire) Ltd.	L. H. Dale
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Oswaldtwistle Public Library	Miss Q. Hallam
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Skipton Public Libraries	P. S. Baldwin
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Transvaal Education Department	
United Kingdom Atomic Energy Authority	E. McCoy
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Finer, Mrs. E.
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Reichmann, W. J.
Wood, Miss J. B.

MEMBERS' ADVERTISEMENTS

MATHEMATICAL TRANSLATION. Translators of Russian or of Polish are sought to translate into English elementary mathematical material (not significantly beyond the calculus level) originally written in Russian or Polish. Fee to be arranged. Write to William H. Meyer, 415 Eckhart Hall, University of Chicago, Chicago 37, Illinois, U.S.A. When writing, indicate competence in both language and mathematics

TRANSLATIONS, Technical and Commercial from German and French promptly executed by experienced man (on Aslib Register of Specialist Translators). H. B. Andrews, 43 Wansunt Road, Bexley, Kent. Bexleyheath 3071.

TECHNICAL TRANSLATIONS, German, French by qualified engineer (on Aslib list of specialist translators), fifteen years' experience. Excellent references. Priest, 16 Hart Road, Harlow, Essex

Situations vacant

ASLIB invites applications for three posts connected with a research programme into the comparative efficiency of various information retrieval systems. Project involving indexing of technical reports and articles and located at the College of Aeronautics, Cranfield, Beds, will take two years and there are prospects of continued employment in information research work. Theoretical and practical knowledge of indexing essential. Knowledge of aeronautics useful. Accommodation can be arranged. Salary range £700 to £1,200 per annum Applications, naming two referees, should be addressed to the Director, Aslib, 4 Palace Gate, London, W.8.

BRITISH COUNCIL MEDICAL LIBRARY. Temporary part-time assistant required between September, 1957 and March, 1958. Duties involve accurate keeping of records Library or secretarial experience in a learned institution a useful qualification. Salary £5 per week of 18¾ hours. Apply British Council, 65 Davies Street, London, W 1.

CHEMIST. BAKELITE LIMITED have a vacancy in their Technical Library in Birmingham for a chemist to assist in the collection, classification and distribution of information and to maintain technical records. If necessary, training will be given in library work, but a degree or equivalent qualification in chemistry is essential Applications giving details of age, training and qualifications should be addressed to Development Manager, Bakelite Limited, Redfern Road, Tyseley, Birmingham 11.

INFORMATION OFFICER required, either sex, 22–27, for export marketing member of light engineering group in outer London (Essex). Technical and/or economic background and qualifications, and training in analytical indexing and information (not publicity) work necessary. Progressive salary according to age and experience. Five-day week. Good staff conditions. Canteen facilities available. Please reply, giving full details to Box No. 7, Aslib.

PFIZER LTD. seek an experienced information officer to develop a specialized information service at their factory and research laboratories at Sandwich, Kent. The Company's products, among the foremost in the pharmaceutical, nutritional, veterinary and chemical fields, are backed by extensive technical and research services Applicants should possess a recognized qualification in one of the subjects mentioned and have some acquaintance with one or more of the others. Experience of information work, preferably in these subjects, is essential and a knowledge of one or more European languages is desirable. This is a new appointment with considerable scope for the right person and a generous salary, in any case not less than £1,500 p.a., will be offered.

Aslib has been asked to assist in the selection of a suitable candidate and applications, marked "Confidential", should be addressed in the first instance to the Director, Aslib, 4 Palace Gate, London, W.8.

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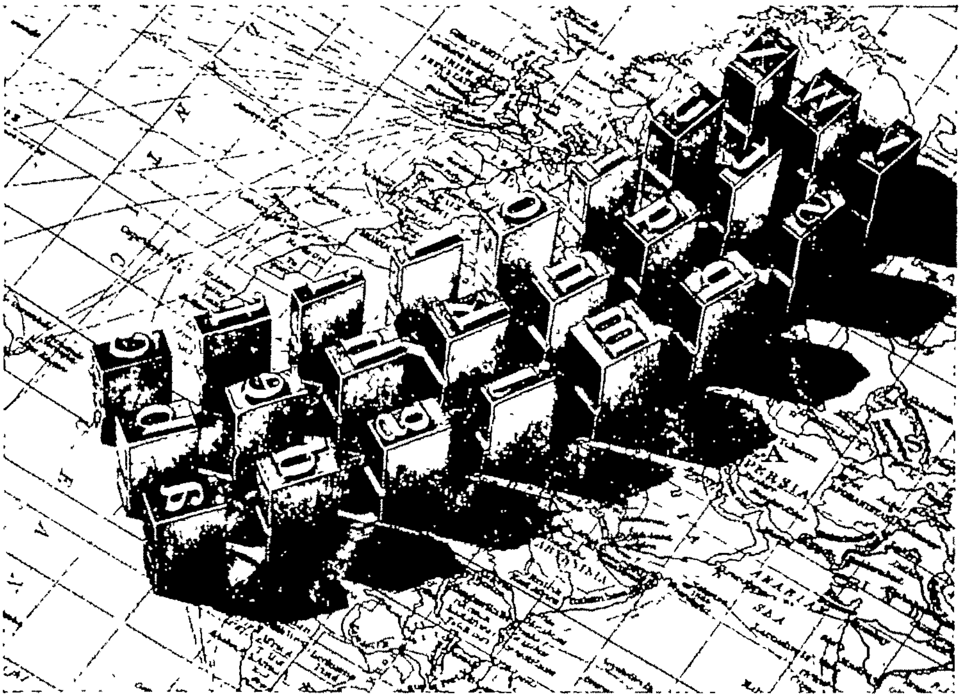

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THE THIRTY-SECOND ANNUAL CONFERENCE

THE Thirty-second Annual Conference was held in the Grand Hotel, Scarborough, from 20th to 22nd May 1957. Except for Monday afternoon, when delegates were assembling, the weather was mainly fine and the North Sea was in one of its calmer moods. About 250 members were present, including several from overseas amongst whom may be mentioned Miss M. E. Karnupe, of the National Research Council of Canada; Dr. A. Gorter, Netherlands Central Institute for Nutrition Research T.N.O.; Mr. Kjell Hansen, Royal Norwegian Council for Scientific and Industrial Research; and Dr. C. Groeneveld, Royal Dutch Shell, Amsterdam.

Four out of the five papers were presented on the Tuesday. Of these, 'Lines of communication', by Mr. E. Martindale, and Miss R. M. Bunn's progress report on planning a national lending library for science and technology are printed in this issue. Mr. C. W. Hanson took the Chair for both. The papers given at the afternoon session, when Mr. R. M. Fishenden took the Chair, are to be included in the October issue. These will be Dr. R. E. Fairbairn's paper on 'Information methods: adaptation to growth', and 'Work measurement: assessment of results', by Mr. B. H. P. Rivett.

Wednesday morning was given up to a very lively Annual General Meeting with Miss Barbara Kyle, Chairman of the Council, presiding. Apart from the usual items of an annual general meeting, the most important business was the debate on the proposal that Aslib should establish some form of qualification for information officers. This has been summarized in *Aslib Proceedings* for July 1957, p. 220. A list of the newly elected Aslib Council was also published in the same issue.

At the last session of the Conference, on the Wednesday afternoon, Mrs. Beatrice Warde gave a talk entitled, 'The best laid plans . . .' Mrs. Warde's talk is not being published; cold print would scarcely do it justice. It is equally difficult to summarize it adequately. The theme was typography, which the speaker defined as 'all the processes, mental, manual and mechanical which have to do with the transmission of ideas from mind to mind, in which printing type is in any way used' but it was illuminated by gleams from the multiple facets of Mrs. Warde's own personality and experience. Traveller, poet, editor, author, lecturer, Mrs. Warde is the Founder of Books across the Sea, a graduate of Columbia University, a Governor of the English-Speaking Union and of St. Bride's Foundation, and Editorial Manager of The Monotype Corporation. Many who heard her would join with the Chairman, Mr. Agard Evans, in his praise of a far-ranging talk that was remarkable for its combination of wit and wisdom.

ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 9 **September 1957** **Number 9**

LINES OF COMMUNICATION

BY E. MARTINDALE

Department of Scientific and Industrial Research, Edinburgh

32nd Annual Conference, Scarborough, 21st May 1957

IT is with some trepidation I introduce this subject before an audience with such a wealth of experience in scientific and technical information work, but I hope to hold your attention for the next forty-five minutes as I try to evaluate the factors which, in my experience, have influenced the flow of information and, I hope too, to provoke some much needed thought on the problems that confront us all in this field today.

'Lines of communication' is a common phrase in military spheres. From the days of messengers on foot or horseback—from the beacons and semaphore mirrors in Elizabethan times up to the complex V.H.F. signalling unit of today—the success of any military operation has depended to a large extent on reliable communications. The Forces may have twenty-year stocks of blanco but they have never had any doubts as to the value of maintaining an efficient system of communication.

In science and industry today we can also find highly developed organisations which have been created to speed the flow of scientific and technical information. But there are areas where smoke signals would be an improvement.

HISTORICAL SURVEY OF INFORMATION FLOW

How did the present system of transmitting the results of scientific research to industry grow? One cannot establish a definite birth date for this event but, from their inception, the learned societies were concerned with the exchange of information between scientists and undoubtedly some innovation sprang from their discussions and papers, though that was more by accident than design.

Towards the end of the eighteenth century there were established in the provinces many little clubs of scientific and literary men who were for the most part distinguished by an active and liberal spirit of inquiry and, where the gap between innovation and invention could be bridged, by the intercourse of personal acquaintances. Perhaps the most important of these provincial societies was at Birmingham. In his book on Boulton and Watt, who were members of the Birmingham group, Smiles tells us that 'the object of the Society was to be at the same time friendly and scientific. The members were to exchange views with each other on topics relating to literature, arts and science, each contributing his quota of entertainment and instruction.'[1] The rate of expansion of science and technology was, however, too rapid to be accommodated by the extension of social institutions such as these, and the founding of the British Association in 1831 can be regarded as marking the end of a period when personal relationships on the necessary scale were feasible. The change from speech, involving small-scale intimate contact, to print, which made communication impersonal between large numbers of individuals, was inevitable. The growth of scientific and technical publications in the nineteenth century was astonishing. In 1800 there were less than twenty scientific and technical journals. By 1900 the number had grown to over two hundred. Today one can find almost two hundred journals in every scientific discipline.

How was the communication of the results of research, to industry, organized during the nineteenth century? The answer to this question is quite simple. It wasn't. True, there were great developments during this period; as with the sowing of seeds, some of the scientists' ideas fell on fertile ground, but to set up organizations to make use of science systematically and to prepare the ground for its assimilation never entered the mind of the British industrialist nor of the scientist of a century ago.

By the middle of the nineteenth century it was obvious that the industrial leadership of Britain was being seriously challenged. The system of personal contacts in the eighteenth century and the haphazard publication and distribution of research results in the first half of the nineteenth century were clearly ineffective and outmoded. The outclassing of British products by European competitors at the 1867 Paris Exhibition made this quite explicit. A Royal Commission was set up to survey the situation, and the answer to the problem was sought in improving and expanding the educational system. The last quarter of the nineteenth century saw the establishment of many of our provincial universities and technical colleges. The latter under local authorities, reinforced initially by 'whisky' money,* built up a system of training to meet the needs of industry which has lasted almost unchanged until now. If I may digress for a moment I should like to remind you that we are faced with a similar situation today and the remedy is again being sought in the expansion of our educational facilities. I should like to suggest that this new challenge is one which concerns Aslib as much as anyone. However, it would be wrong of me to precipitate discussion on one of the main topics of tomorrow morning's session.

By the end of the century science was the province of groups of specialists working in and supported by universities or quasi academic institutions. It became attenuated and institutionalized in the meetings and journals of the learned societies, where chemists produced papers for other chemists, geologists communed with geologists and so on. The whole context of industrial innovation had changed. Before 1850 the worlds of science and industry, though separate, had not been distinct. After 1900 science and industry were exclusive social systems entered by different routes with very few institutional relationships through which people or information could pass between them. With the exception of the National Physical Laboratory, established in 1900, and a few enterprising firms in the electrical and chemical industries, there was little change in the situation in this country until 1916, when the Department of Scientific and Industrial Research was brought into being.

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* The Technical Instruction Act of 1889, which followed the reports of the Royal Commission on Technical Instruction 1881–4, empowered local authorities in England and Wales to supply technical instruction or to aid its supply by supporting voluntary institutions or granting scholarships. Funds that could be, and were widely, used for this purpose were provided by a duty on wines and spirits (known as 'Whisky Money') that was originally imposed for other reasons.

The first world war brought home to industry and government alike the necessity to create and maintain a line of communication between science and industry, and one of the initial steps taken by D.S.I.R. was to establish a co-operative system of industrial research associations. We all know how the R.A. movement has now grown to embrace practically every field of industry and is today one of the main lines of communication between the laboratory and the factory, but the old system of institutionalized publication and discussion remained and it is still with us. In recent years some attempts have been made to create new systems of communication and to modify other channels to improve the flow of scientific and technical information to industry, but before we discuss these let us first look at the commodity with which we are dealing.

THE PRODUCT

The product of scientific research is the addition to knowledge in the form of facts supported by experimental or theoretical data to explain them. Our product may appear in a great variety of shapes and sizes and in many different languages—in books, periodicals, reports, patent specifications, monographs, etc. It may have been produced fifty years ago or just last week, and the first two problems we must consider are its diversity of content and growth over the past one hundred years. If we are going to be realistic we must also look to the future and expect even more rapid growth in the next one hundred years.

Who produces it? The scientist or technologist in the laboratory, the engineer or technician in the development department, the statistician, the social scientist, the university or technical college student, the inspired inventor, they all contribute. We have, therefore, a commodity based on an infinite number of principles, concerning a similar but vastly greater number of materials or ideas, described in many different ways by a great variety of people. Recently I asked a leading sales executive of one of our largest firms how he would market this product—research results—in Britain. He said, given unlimited funds and a sales staff several thousand strong, he might attempt it but he'd rather look for another job.

Who are the customers? In the main they are the same type of people as those who are producing our commodity. Who else could understand and use it? This would be the end of my lecture if every firm in the country had a few physicists, chemists, engineers and metallurgists with a library and information service to feed them all the data they require, *and* a management with as much knowledge of science as of accountancy, production, sales and other managerial functions. But, of course, we are faced with a tremendous shortage of all grades of scientific and technical staff and few but the most progressive firms have established their own line of communication between research and industry or, within the firm, between research, development and production. Even when the situation improves, which is unlikely for some considerable time, there will still be thousands of firms whose activities will not allow them (or persuade them) to maintain a galaxy of scientific talent such as may be needed to assemble and evaluate all the new scientific information which may be of use to the firm. In his opening address to the Royal Society Conference on Scientific Information in 1948 Sir Edward Appleton pointed out that if one man sat down to read solidly for a year all the scientific and technical information being published he would find at the end of that time he was one hundred years behind with his work.[2]

THE PROBLEM

I think we can now formulate our problem, analyse the research already done and then see what conclusions we reach. Interpretation of the problem could take the next half-hour, so I have chosen a wide definition which will, I trust, cater for everyone, including those who feel they already know the answer. 'How can we ensure the more effective use of the results of scientific research in industry?' and, as a corollary of that statement: 'What factors influence the flow of scientific and technical information to industry?'

RESEARCH INTO THE FLOW OF INFORMATION

One of the most important studies in this field was undertaken by the Manchester Joint Research Council in 1950–3. The report on this survey covered many aspects of the use of science in industry, but I have selected four passages which have an intimate bearing on our problem.[3]

> 1. 'One of the clearest convictions this inquiry has left with those most intimately concerned is that more and better liaison and education are needed to a far greater degree than more and better science. The resources of science still untapped by industry are immense, and more and better bridges between industry and science, and greater mutual respect between the two worlds, are the prime needs in Britain which the investigators think their inquiries have revealed.'
>
> 2. 'The ultimate responsibility for the use of scientific knowledge, as for the introduction of any sort of new idea, lies with the board of directors and the top level of management of each firm. The personalities of such men, and their attitudes to the scientific approach to their production, are, therefore, a matter of predominating importance.'
>
> 3. 'It also appears that many firms, which could well use new scientific and technological knowledge, have not the staff adequate to review the literature, to find out what is relevant, or even to appreciate the significance of relevant material when it is brought to their attention.'
>
> 4. 'Here lies the problem for those concerned with liaison between the two fields of human endeavour. If the experience of the investigators is anything to go by, the printed word is likely to achieve little. Personal contacts are the only instruments to evoke an effective change in the habits of thought and the climate of opinion on both sides of the fence.'

There, then, are some of the results of an investigation covering over two hundred industrial establishments manufacturing a wide range of products and varying in size from fifty to over a thousand employees. Their recommendations summarized are: more scientific and technical staff in the individual firms, more scientific knowledge at top level in management, and more use of personal contact in the dissemination of scientific and technical information.

HILLINGTON

In 1954 I tried to take the Manchester Survey one step further by instituting an experimental technical liaison service in the Industrial Estate at Hillington outside Glasgow. The object of the experiment was to try to find out what use industry would make of a technical information service situated literally on its doorstep. Through arrangements with the Board of Trade, the Estate Tenants' Association and the Estate Company I was able to establish a temporary office which was within walking distance of over a hundred firms varying in size and product. When the service commenced each firm was notified by letter but no further effort was made to canvass work. In the first month there were fifteen inquiries, but in the five successive months the service was in being the number dwindled. Total inquiries received numbered forty-three.

With the aid of Dr. Urquhart, of D.S.I.R. Headquarters, I established a small library of technical and scientific periodicals, covering a wide range of subjects, in the lounge of the managers' dining-room, which was a communal affair centrally situated on the estate. This was quite a busy place during the hours of 12 to 2 p.m.; but the competition of *Punch*, *Men Only* and the odd rubber of bridge was too much for my display. On one occasion I sealed what I thought would be thirty of the most popular technical journals with a small piece of scotch tape. After two weeks none of the seals had been broken. This whole experiment was not sufficiently well planned to draw any definite conclusions, but my main impressions were as follows:

> It is unlikely that any passive type of T.I. service will make much impression on industry, particularly on the small firm whose executive staff combine a number of functions and have little or no time for anything else. (The most respectable and well-known organizations servicing industry spend enormous sums on advertising and sales staff. Technical information is a product of no less value and should be treated similarly.)
>
> The small firm also presents two extra problems not common in the larger organization where specialist staff are available. The first of these is the investigation of the original inquiry and, secondly, the interpretation of the answer provided.
>
> The third point I wish to make is that though 75 per cent. of the inquiries received in the Hillington exercise were answered relatively easily from information obtained from D.S.I.R.'s research stations, R.A.s and other sources, the supplementary inquiries these answers provoked were often much more difficult to satisfy. (This is a point which must be borne in mind. The answer to a scientific or technical inquiry may often result in a demand for additional information regarding performance, application, availability of equipment—information which may or may not be recorded and comes under the general category of 'know-how'.)

My final point regarding the Hillington survey is concerned with the personal contact. With some firms I established a good understanding and found a fair degree of willingness to co-operate after my first visit. With other firms it took two, three and sometimes four visits before I had established the degree of confidence or personal goodwill which is a prerequisite for success in any venture of this kind. Probably some of you will wish to comment on these points later, but let us now examine the next experiment in information flow.

SCOTTISH COUNCIL (DEVELOPMENT AND INDUSTRY) SURVEY, 1955

In 1955 another large survey, this time of small and medium-sized firms in the light engineering industry, was undertaken in Scotland by the Scottish Council (Development and Industry). A report of this survey is due to be published in the near future. I have, however, been closely associated with the work and the three factors under investigation were:

a. sources of information,

b. firms which received or which might have been receiving the information, and

c. the channels of communication between source and firm.

A team of three experienced men—a mechanical engineer, a chemical engineer and a marine engineer—was chosen to carry out the field work. In this investigation the Scottish Council combined the work of the survey with a considerable amount of advisory work and, by visiting each of 109 'guinea pig' firms three times, they were able, in most cases, to establish useful contacts at various levels within these firms. A total of 223 inquiries were received, roughly 2 per firm, of which 160 were answered effectively. Sixty-seven of these inquiries or roughly one-third, were classified as commercial inquiries; that is, problems of markets, marketing, licensing agreements, finance and so on.

At the end of the survey thirty-four inquiries remained unanswered, and they concerned mainly problems of design and manufacturing techniques or trading introductions for new market outlets. This again indicates an important fringe of the whole field of information flow in which it is relatively difficult to find an effective source of information (many of the thirty-four problems have now been dealt with).

The sources of information used in this survey were extremely varied and I think it would be worth while mentioning them:

21 inquiries were answered by the provision of literature.

17 from the personal knowledge of the survey team.

58 by the Scottish Council staff.

17 by T.I.D.U. and D.S.I.R.

18 by Research Associations.

32 by other firms.

12 by technical colleges.

10 by the Technical Information Service in Canada (which produced very complete answers to inquiries often in a shorter time than some of the indigenous organizations already referred to).

5 inquiries were answered by libraries.

One may well ask at this stage how many of these problems were being pursued by the firms themselves before the survey began. The answer is 117, or just over 50 per cent. Of the remainder, two-thirds were stimulated by the visit of the survey team liaison officer and one-third were problems which, for some reason or other, had been shelved and were resurrected when the firm found someone who was willing to help them.

I have selected one or two more facts from the statistical tables contained in the Scottish Council's report, and I think it may be worth noting that only twenty-six of the 109 firms were members of a research association and sixty-two firms had no effective knowledge of these organizations.

When the firms were asked what sources were used for keeping in touch with developments, literature came first on the list with a total of ninety-four firms; but when asked what sources were used for obtaining answers to problems only three firms said they referred directly to literature. I think this point is worth analysing. The firms in question obviously recognize the value of literature as a source of new ideas, but when it comes to finding the answer to specific problems direct reference to literature is the last source to be considered. Why? Dare I say at this stage that none of the firms was a member of Aslib and only six or seven had ever heard of the organization? It could, of course, be assumed that many of the firms had never tried to use a library, and it is certainly clear to me that the usefulness of the library channel of communication is not fully recognized in this respect. There could, of course, be other reasons. The usefulness of literature depends on the user's ability firstly to find what he requires and then to evaluate the information in terms of his own particular problem, and that brings us back to the scarcity of qualified and experienced scientists and technologists in industry.

On channels of communication, the Scottish Council report has this to say: 'Having regard to the firms visited, breakdown in the provision of information arises at the transmitting end because the main means being used to contact the small and medium-sized firms is by literature and at the receiving end the main effort is directed outward towards their market. Searching for and interpreting technical literature is a minor interest'. The conclusion drawn from this survey is that one of the main obstacles to the flow of information is the lack of a selective link between source and potential user, and it is suggested that this obstacle can be at least partially removed by the creation of a technical liaison service for all small and medium-sized firms within a defined geographical area.

The report makes several recommendations but points out that one of the features contributing to the success of the experiment was the support given to the survey team by the local technical colleges in Glasgow and Edinburgh. At these centres of technological training consultation with a variety of highly qualified and experienced staff was readily available and the report recommends that consideration be given to setting up a permanent technical information service on similar lines to the survey but based in or near a technical college.

E.P.A. SURVEYS

Two further surveys on the flow of technical information to industry were completed recently. The first was designed to try to establish the extent to which small and medium-sized firms in the food, textile, electrical and metal manufacturing industries were organized to obtain and make use of technical information. This was a European Productivity Agency project covering eight countries, and though the field of work is complete the report is not. I have been unable, therefore, to obtain any detailed information, but I understand that the survey has shown how dependent the small firm is for technical information on its suppliers, and plans are already being made for a follow-up project which will study the methods used to carry out this function by such firms. I am certain the E.P.A. report will be of great interest when it is published.

NORTH-EAST INDUSTRIAL AND DEVELOPMENT ASSOCIATION SURVEY

The other survey was planned on a much more modest scale and was undertaken by Professor Curtis in the Newcastle area. His report was published a few days ago and I have not yet had the opportunity to study it, but, from discussions I have had with Professor Curtis, I know that this investigation has shown results which are in many ways similar to those already described.

LIVERPOOL AND BIRMINGHAM

Among other experiments in this field I should also like to mention those carried out at Liverpool and Birmingham. I am using the word 'experiment' in the sense that some effort has been made to improve existing lines of communication as well as trying new ones. The Liverpool Public Library Industrial Liaison Service and the Birmingham Productivity Association Technical Advisory Service are certainly worth further consideration in this context. The Birmingham service has been established after careful study and due consideration of the existing services available to industry in the area. There was no suggestion that these were inadequate, but the Association recognized the need for a focal point through which inquiries could be directed into the correct channel and, as far as the small firm is concerned, provide a service for the two additional problems already mentioned, i.e. investigation of the inquiry and interpretation of the answer provided. This is done by visiting the firm making the inquiry and by a follow-up procedure.

The Liverpool Public Library Service to industry is not, I am sure, unknown to you but I feel it must be included because it represents in many ways a new approach to our problem. Public libraries have always carried stocks of technical and scientific literature, but here we find a library which has not only created a separate department to deal with such literature but is actively selling its service to industry. The necessity for personal contact to create and maintain the lines of communication through which information may flow freely between source and inquirer is again emphasized by the provision of library officers who make regular calls on member firms. A bulletin of scientific and technical documents acquired by the library is prepared and circulated to local industry. What has this service achieved? I have seen recently a selection of the inquiries which have been successfully answered, and that record alone speaks volumes of praise for the service.

All the schemes and experiments I have spoken about so far have been concerned with lines of communication within a specific geographical area to a variety of industrial firms. Naturally, these conditions present their own peculiar problems, but let us now see what new ideas in improving the flow of technical information are being tried out within specific industries.

R.A. LIAISON SERVICES

One of the oldest research associations, that for the cotton industry, was the first to recognize the need to improve their line of communication to the industry they serve. I am speaking of the Shirley Institute in Manchester where, for many years, more than 10 per cent. of the total effort of the institute has been directed to what *it* describes as 'communications'. Like most research organizations, Shirley for many years relied mainly on publications and the occasional visit to bring the results of its work to the notice of its members. In 1928, in a bold experiment, it recruited a few experienced technologists from industry and trained them to be liaison officers. The experiment was successful and the institute now maintains a liaison staff of fifteen. These men spend more than half their time in factories of member firms. They know the industry and can readily identify and appreciate the problems presented to them. What is more important, they can often translate new ideas in terms of the firm's own particular requirements. Like many other research associations, Shirley too has adopted a system of specialized reports which presents new results and information in a style calculated to appeal to the executive as well as to the technical staff in the firm.

Several other research associations have, in recent years, reviewed their lines of communication and, with the help of Conditional Aid Funds, have enlarged the scope of their information and liaison activities. In most cases the funds were used to employ additional staff to deal specifically with the problems put forward by the industry—to visit these firms and to act as a catalyst between the industry and the research association. Without exception the extension of such activities has led to an increase in the use made of the association by its 'customers'.

One of the most spectacular new 'lines of communication', in my opinion, has been developed by the Production Engineering Research Association. As an experiment in 1954 it put into operation a mobile demonstration unit, which some of you may have seen in action up and down the country. It consists of a prime mover which is a fully equipped lecture theatre and a trailer which is designed for demonstration work. This mobile unit brings the association's work right into the factory and by intimate and practical demonstration provides firms with an unrivalled opportunity to profit from the research work of their association. The unit may stay several days at each firm providing lectures, films or discussions for various groups on the subjects in which they are particularly interested. The success of this service has led to a much more realistic appreciation of the assistance which can be obtained from the research association, and it has been decided to maintain the mobile demonstration unit as a normal part of the association's work.

The Hosiery and Allied Trades Research Association found that over 80 per cent. of its members were using the association services regularly following the extension of their liaison activities under the Conditional Aid Scheme. In future it has decided that the size of the liaison team will be based on the rate of one liaison officer for a hundred member firms. At the same research association the liaison team also found time to develop a publication entitled *Knit Knacks*, which is written mainly for floor management, supervisory and maintenance staff. It is interesting to note that the average number of copies of this publication taken by each firm is seven.

The British Iron and Steel Research Association extended its advisory services with the help of Conditional Aid and concentrated its efforts on problems of organization and maintenance in the smaller units in the industry. Again the results were most encouraging and the R.A. is to maintain the service as part of its normal programme.

I could go on for another hour with similar examples of the increasing use which is being made of the liaison type of information service, but I think it is time to stop and take stock of the situation and try to put in proper perspective the various methods used to ensure a reasonably free and steady flow of scientific and technical information to industry.

SUMMARY AND CONCLUSIONS

I hope you will forgive me if, in my concluding remarks, I refer to sources of information and the 'users of information' as well as the link or line of communication, which is my subject. I feel it is impossible to deal with them separately, since the effective operation of any line requires the active participation of both source and user. It is not difficult to assemble and record facts and then present them as I have done in the past half-hour. To analyse these facts is quite a different matter. However, using the formula my good friend Dr. Urquhart has used on many similar occasions such as this, 'The opinions expressed do not necessarily represent the policy of D.S.I.R.—yet!', I shall try to give you my own personal unbiased and, I hope, constructive criticism.

In analysing this complicated subject we must bear in mind three points:

a. the commodity we are dealing with is information which is recorded principally on paper or, as with 'know-how', in the heads of scientists and technologists;

b. the prime function of communication is to ensure that useful information is passed on effectively and with the minimum of delay;

c. the aim of any communications system should be to maintain and improve its service for the benefit of its customers.

Firstly, then, our commodity. In his book *Laboratory administration*, Hiscocks, of the National Physical Laboratory, deals very effectively with this subject in a chapter entitled 'The flow of information'[4]. He points out that information, to be effective, must be produced by a writer who knows something of the thoughts and habits of the people he is writing for and, as the scientific paper is the logical end of pure research, the laboratory scientist has little interest in explaining his work beyond that point. Yet for information to be used it must first be expressed in simple language. This is not a new problem. William Molyneux, writing to Hans Sloane in 1697, said: 'I hear Mr. Newton's book is out of press and that he designs a second edition. Pray advise him to make it a little more plain to readers not so versed in abstruse mathematics.'[5] In her book on *The application of results of research*, Vera Connell relates an up-to-date anecdote on the same theme: 'A certain plumber wrote to the Health Bureau in New

York saying that he had been using hydrochloric acid with great success. They wrote back saying hydrochloric acid was extremely efficacious but left a noxious residue, and so he wrote saying he was glad they agreed with him. They wrote again using similar language, and he wrote back saying he was still glad they agreed with him, so they wrote again saying "Don't use hydrochloric acid; it eats hell out of the pipes!" '[6]

Hiscocks believes, and he has the support of many people who have experience in this work, that a far more effective result might be achieved, as far as industry is concerned, by the writer who has to be supplied with the material rather than by the scientist who may know the material but is often a poor writer. The research work of Professor G. P. Meredith at Leeds on presentation and comprehension may well have some particular significance in the scientific field. Unfortunately, I cannot find any really convincing data which would support this interesting suggestion.

Taking this point one step further, we may well ask, how is scientific information published at present? A high proportion of the results of research are published in the journals of the learned societies and other similar publications. The pattern must vary considerably but, even within D.S.I.R., it can be as high as 80 per cent. The importance of this factor is revealed when one considers that less than 10 per cent. of the publications taken by firms are of the learned society type. There is therefore some reason to doubt that the needs of the applied scientist or technologist in industry are being adequately catered for.

From the point of view of utilization more thought must be given at the research end of our line of communication to the production or reproduction of reports written for the learned society journals in a form suitable for the technical or trade journals which would appear to be more popular in industry. We can have no guarantee, however, that scientific or technical articles would be more effective in a trade journal. Like the many scientists who read the back pages of *Nature*, the industrialist, too, enjoys the parts of his trade journal which deal with new contracts, personalities and trade news.

A readership survey made by the Social Survey in the electrical and electronics industry has shown that, even in such science-based industries, the average technologist sees only five journals regularly, out of which he reads perhaps three full articles. Library reading accounts for less than 1 per cent. of his total reading, which is done mainly in the laboratories or workshops or at home. He is apparently just as interested in problems of organization as he is in any technological matters, and this has some influence on his choice of reading matter. It would appear also that a concentrated period of reading is usually impossible. I have not studied this survey closely but my impression is that it is a field which deserves more attention and may produce some interesting results.

I can remember working in an office overseas where a three-hour period of reading per week *in the library* was introduced with a fair degree of compulsion. After the initial shock of working for a whole morning or afternoon without interruption, it became an enjoyable routine for some and a penance for others. The answer to this problem lies again I think in education and training. Students of science or technology read what they are told to read mainly to pass examinations, but they should be taught how to use libraries and other sources of information and how to select information which could produce more important results than their examination papers when they are in industry. At the moment the student is introduced to the library as one of the college facilities, like the sports club or the debating society. The library can and should become a functional part of the teaching curriculum, in my opinion, and indeed this was one of the recommendations of the 1948 Royal Society Conference on Scientific Information.[7] The Ministry of Education has recently issued a pamphlet entitled *Libraries in technical colleges* which deals most effectively with this point.[8]

The ability to select and discard and then read and understand is important, but it is, of course, the executive in the factory who makes the final decisions and, as has been shown, there are large numbers of firms with little or no scientific understanding in this elevated position.

The day-to-day work of the industrial executive demands a great deal of reading. He must keep himself informed on prices, markets, raw materials, labour and so on. He will certainly read anything which has a direct bearing on his business, but he finds it almost impossible to wade through a welter of technical literature to find something which might apply to his process or product. Obviously there must be some selection if we are to interest him in the new technique, new material or new idea about which he should be informed.

If our line of communication between source and user is inadequate (and there is evidence to support this), then I believe it derives primarily from the lack of a selective link between industrial practice and sources of new knowledge. Treating this as a radio communications problem, we can see that our transmitters or sources of information are only of value if our receivers, or potential users, are working in the same waveband. And we can also see that, no matter how high the power of the transmitter, the intelligibility of the information it sends out *depends entirely on the selectivity of the receiver*. In other words, therefore, we must employ more *selectors* at both ends of our line of communication. The first reaction of both laboratory and factory to that suggestion would be, where do we find the manpower? If it is not available, then we must think again, and at the moment this is certainly the case. Is there an alternative? In my opinion there is no wholly satisfactory alternative to increasing the number of technically trained people in both laboratory and factory; men who can appreciate the value of industrial research and have the experience and the facilities to seek out and apply such knowledge where it will do most good. But while this is a basic necessity, it will not by itself solve the communications problem.

That now brings me to my second point. The function of communication—which I have already defined as being 'to ensure that useful information is passed on effectively and with the minimum of delay', and there are few services with which one could find fault if to that were added 'on demand'. But 'on demand' is no longer sufficient, because, in my opinion, no line of communication, be it government service, research association, public library or any other organization claiming to be interested in the dissemination of scientific and technical information, is doing its job properly if it simply maintains stocks of literature and waits on industry to ask for it.

Much of the industrial strength of this country lies in the little firms (there are thousands of them), and it is here also that some of the important improvements in productivity can be achieved. But the manager of the little firm is not impressed by a piece of paper telling him what a fine thing is D.S.I.R., or Aslib, or the public libraries. Often he is unaware of such services, but when he does decide to do something about a problem which has arisen he knows from experience that it is the engineer in the friendly firm across the street or perhaps the works manager in the firm he worked for previously who will help him, and so he rings up his contact and together they talk over the problem. Whether he gets an answer or not, he is unlikely to turn to any other source where he has no personal contact, and until we establish, or at least facilitate, that kind of contact in industry, our line of communication is not fulfilling its true function.

There is, however, another important aspect of the same problem. I like to call it 'the Rabbie Burns tradition'. (Not, I assure you, because it is common only to Scots firms. It is based on a line from one of the Scottish bard's better-known works.) 'Oh, for the glorious privilege of being independent.' An admirable sentiment in the right place, but I am sure Rabbie never intended it to be applied to the seeking of knowledge.

However, there are many firms who follow this false philosophy. You know what I mean—'We must not let anyone know what we are doing'. Or 'It is a bad show to go outside the firm for technical information'. Then there are the firms with the attitude: 'Don't cross your bridges until you come to them'. Troubles are ignored until something has to be done. Then finally there are firms, perhaps more than one would expect, who just do not recognize or admit their own faults and inefficiencies. (A common human failing—you'll agree.)

To create the conditions whereby industry can and will make full and proper use of the knowledge—both scientific and technical—which is available, we must show more willingness to try to understand the needs and susceptibilities of such firms and build up a line of communication which they will recognize as being of practical value. I suggest quite seriously that, up to now, with few exceptions our approach to this problem has been pedestrian.

What about the second part of this definition of the function of communication, 'to pass on information with the minimum of delay'? When the industrialist has a problem he usually wants it solved the day before yesterday. He demands the impossible and is always looking for miracles. Our postage system is good but letters take time to write and even longer to answer. Telephone conversations can be costly and are not always as effective as they are made out to be. But there are other systems of communication which should not be ignored. The Telex system, developed in this field by the Manchester Library Service, is an example of what can be done to speed technical inquiries on their way. Could this system be developed for scientific or technical inquiries on a national scale? There is no technical difficulty in linking a hundred or even two hundred agencies together in a teleprinter system. What about a visual link? TV is no longer a stranger in the communications field and could surely be adapted to meet our needs. The cost might be prohibitive but, as I have already pointed out, the growth of knowledge and its product, scientific literature, is so enormous that in concentrating on the importance of our lines of communication between source and user we may be in danger of allowing the link between sources to become inefficient and out of date. No single organization can ever be self-sufficient in scientific and technical information. Co-operation must, therefore, be a keystone in our policy of development.

Now to my final point, 'that the aim of any communications system should be to maintain and improve its service for the benefit of its customers'. I have already discussed some aspects of the various surveys which have been made into the flow of technical information to industry. I have also commented on the new advisory services which have been started, and I think you will agree that in almost every case the emphasis has been placed on extending the use of personal contact. But is this the panacea for all our problems? I think not. For one thing, the expansion of the personal contact type of liaison service to meet the needs of industry would require many more experienced and highly skilled men than are available at the moment. Secondly, would the cost be justified? From the information I have received the cost can be as high as £12 per visit. Admittedly, one successful visit may justify a dozen unsuccessful visits but, as always, factual evidence on the value of this or for that matter any other form of information service is difficult to obtain. One must accept without reservation that the dissemination of scientific and technical information is vitally important to an industrial community such as we live in today, and the only real measure of the value of the various means employed to do it is the use made of each service by industry.

I think it is possible that, in the past, we have relied too much on standard or stereotyped publications and too often on conventional practices as a means of disseminating information. A *planned* expansion of the information or liaison officer type of service, both on a geographical basis and industrywise, would be a step in the right direction. But at the same time it would be foolish to imagine that this in itself is the complete answer.

In planning for the future let us apply the scientific method with logic and common sense, ignoring none of the factors which have influenced the flow of scientific and technical information in the past and looking at new methods of doing this without prejudice but in the knowledge that there will always be a surfeit of paper and a scarcity of trained personnel in industry and liaison or advisory work. Then I think we shall see that there are many ways of improving our lines of communication:

1. More scientifically trained staff in industry.
2. A more objective approach to the writing and preparation of scientific information.
3. Better and more selective ways of marshalling and handling information.
4. More co-operation and more efficient means of communication between sources of information.
5. A more aggressive approach to the problem of disseminating information, preferably involving a degree of 'aiming' at potential users.
6. Bigger and better liaison services within financial and manpower limits.

By far the most important of these suggestions is the increased employment of scientifically trained staff in industry. The laboratories of this country are not full of back-room boys churning out new ideas by the dozen any of which, if taken up by industry, will automatically show enormous profits. Scientific research is something more than an idea to be picked up at odd times to help a firm which finds itself in difficulty. Such firms must learn to accept that a knowledge of research and sources of information is as important to them as a knowledge of markets and materials, or even income tax, and that progress in scientific research, like progress in any other field, is made by a series of small steps, each of which must be taken and followed to show real progress. The function of the librarian, the information officer and the liaison officer is not simply to lend a helping hand to those firms which have accepted this philosophy but to try to convert the agnostics and to encourage those who stand in between—half convinced—to take a more sustained and active interest in the work of the scientist, on which the future economic prosperity of this country so largely depends.

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CHAIRMAN'S INTRODUCTION

The Chairman (Mr. C. W. Hanson), in introducing Mr. Martindale, said they were extremely fortunate in having a Government department which took such an active interest in the work they were doing. The conventional view of Government departments was wrongly that they were conservative, slow-moving and rather stupid. This was certainly not true of D.S.I.R., which had in all matters concerning Aslib always been adventurous. Those members on its staff who had taken part in annual conferences and other meetings had well expressed the liveliness of their departments.

Dr. Urquhart, for instance, whom many delegates knew well, could hardly be called conservative or slow-moving.

The two speakers that morning—Mr. Martindale and Miss Bunn—were both horses from the same stable, and he looked forward with great eagerness to what they were going to say.

The title of Mr. Martindale's paper was 'Lines of Communication'. There was, neither in his title nor in the very brief synopsis, any use of the words books, journals, serials, documentation and so on. Although it was true that most of what people thought they knew was ultimately derived from the written word, either directly or through an intermediary, nevertheless the written word, by itself, was not always sufficient as a means of communication. In order to get a reaction to take place between the written word and the reader certain conditions were needed, conditions of timing, for instance. Also a catalyst was often needed, a catalyst very often in the form of a person—a human interpreter.

Mr. Martindale, in his paper, might not be dealing with this specific point, but there was a close relationship. The lines of communication must be so arranged that both in timing and in form and presentation the end product, as it reached the recipient, could be of the maximum value to him.

DISCUSSION

Mr. F. B. Roberts (*Engineering*) said he had two points to make on Mr. Martindale's paper, which had thrown so much light on the problem of communication.

The first related to his quotation from Sir Edward Appleton's remarks in the Royal Society Scientific Information Conference Report, 1948. It was, he believed, that if a man started to read all the technical and scientific literature, at the end of a year he would be one hundred years behind in his work. That was a startling statement, and no doubt it was true. But perhaps it could be expressed in another way: that one hundred people (or was it one hundred and one?) constantly reading would be needed to make sure that all the technical and scientific literature was read.

This over-simplified the issue, of course, but it did make the point that in a country where twenty million people were working for fifty or sixty thousand firms, a few hundred people could provide all the information services, or at least all the information, that was necessary for industry—a staggering thought!

MR. B. AGARD EVANS (Ministry of Works) said he had listened to Mr. Martindale's review with the greatest possible interest. It brought together as a whole the papers, reports and documents of which many delegates were aware; and it made us realize clearly what a very big problem was constituted by communication.

Communication between chemist and chemist was reasonably provided for, but communication between the research worker and the practitioner was very much more difficult. The Ministry of Works dealt with building information and there was not much brand-new science. There was a continuous trickle of information from research centres. An analysis of inquiries showed that a high proportion did not relate to anything brand-new at all. The answers might be well known and well established to the specialist who was immersed in the work, but they did not happen to be known to the individual who was making the inquiry.

This was where the institution journal had little communication to make to industry, because it was too strong meat. They could not take in anything so undiluted as that.

For many years he had despised a paper in the building industry called the *Illustrated Carpenter and Builder*. He could not understand why all his regions insisted on having it. It was quite the most popular paper. It rarely reported original work, but it did convey to the individual in the language he understood what he wanted to know.

The infiltration of a technology by science was a slow and gradual process, and it was something like the process whereby fellows wrote the gardening columns in the week-end newspapers. They kept on saying the same thing again and again with a slightly new twist and something added. This was what got over, because most people read the gardening column to see what they ought to be doing that week-end.

He welcomed the publication of *The New Scientist,* although it had not a great deal to say. It was not of great intrinsic value and was generally out for novelty the whole time. It was primarily popular science. But it was developing a climate so that science was interpenetrating ordinary life, and to that extent it was extremely valuable.

MR. MARTINDALE said that he agreed. The problem was to analyse information and distribute it in a digestible form to those who could use it.

As to what people read, he had referred in his lecture to The Social Survey inquiry into the reading habits of technologists and scientists in industry; what he had not said was that this inquiry showed that in their choice of reading matter such people were influenced not so much by the scientific content of the journal as by what he would call the organizational content. In other words, it was the new jobs, the new contracts and general information and news about industry as a whole that attracted interest.

He agreed in general with Mr. Agard Evans about *The New Scientist,* but admitted that he read every issue and often found it more informative than some official publications.

MR. V. D. FREEDLAND (British Hat and Allied Feltmakers Research Association) said he felt Mr. Martindale's paper was aimed to a great extent at the research associations that were principally responsible for providing industry with new knowledge. He had put his finger right on the point in his demand for better liaison services as distinct from purely library information services. He had also put his finger as firmly on another point—the cost of liaison.

To the small association this was critical and he would like to ask what steps could be taken to cut down this cost. Liaison was the only way in which the user could be reached directly, but it was very difficult when the cost might represent the subscription of a small firm to a research association.

MR. A. H. HOLLOWAY (Ministry of Supply) agreed that personal contact was the first necessity, but plainly the cost of maintaining contact would often exceed the subscriptions. There were therefore two requirements. The first was the ability to put succinctly the question over which the firm had been mulling for eighteen months without finding an answer. The second was experience in producing at least a partial answer very quickly. Personal contact must also lead to some readily assimilable means of conveying the bread-and-butter information from the research association or other organization to the not frightfully enthusiastic recipient.

MR. F. C. MUTTON (Thames Board Mills Ltd.) said he would like to comment from the receiving end, the industrialist's point of view. In the paper and board industry they were very well served—perhaps exceptionally well served—with abstracts. Abstracts were extremely valuable to industry, and the abstracting services of the British Paper and Board Industry Research Association and the Printing, Packaging and Allied Trades Research Association covered everything of significance to the industry published throughout the world. The value of this was that it gave in embryo everything one might want to look into; and to his mind a regular and thoroughly reliable abstracting service was one of the most valuable forms of liaison.

As regards internal reading, it would seem that many people in an industrial concern might be industriously plodding through the same journals and this involved immense waste of reading time. A focal point was vital to avoid duplication. There might be a layman in central control to maintain an unbiased overall review and to see that the chemist, the engineer and so on received equal service. Information canalized in this way to the people who needed it could save 50, 60 or even 70 per cent. of reading time.

In reply to Mr. Holloway, MR. MARTINDALE said that he was, of course, in favour of personal contact. There had been some studies on this form of communication in the United States and he had looked them out in another context. Like most functions, personal contact and 'old-boy' contact went in a cycle. The contact was made; it was worked up to a degree of usefulness; and then it tailed off and was finally broken. The period covered could be as short as three months and was seldom longer than three years, according to the evidence available.

There was therefore a continuing function in making new and re-establishing old personal contacts. This was recognized by research associations, but much of the work was 'missionary' in character and relatively unrewarding. Perhaps more thought should be given to a combined and rationalized approach to the problem by the associations.

He was not sure that he was qualified to comment on choice of reading material, but it did seem peculiar to suggest that a layman should distribute what he thought important to specialists. Reading time could impinge considerably on other functions which in industry appeared to be more important. An improvement in presentation and distribution of publications might have some effect.

The CHAIRMAN said that the audience had already shown their appreciation of an exceedingly good and stimulating start to the Conference. He regretted that there was not more time for questions, but he felt sure Mr. Martindale would not mind being approached after the meeting. He thanked him very much.

PLANNING A NATIONAL LENDING LIBRARY FOR SCIENCE AND TECHNOLOGY

BY R. M. BUNN
Department of Scientific and Industrial Research

32nd Annual Conference, Scarborough, 21st May 1957

INTRODUCTION

FOR the last six months I have been part of a small section of D.S.I.R. which is planning the National Lending Library for Science and Technology. To begin with, the section had no name. Now we call ourselves the D.S.I.R. Lending Library Unit. Today I want to tell you a little of how we are going about the job.

In a paper recently published[1] Dr. Urquhart has already presented some of our preliminary ideas. These included estimates of the present useful output of scientific literature and the probable output in a hundred years' time. In fact, these estimates are, of course, little more than guesses for which Dr. Urquhart is mainly responsible. I am getting quite used to him bursting into my room with such questions as: 'What percentage of the world's scientific literature output will be in Chinese in a hundred years time?' Five months ago he put the answer to this particular question at 25 per cent.; now he seems to think it will be nearer 50 per cent. All we really know about the subject is that at present 1 per cent. of the world's scientific literature output is from China and the Chinese population is reported to be increasing rapidly.

However, thinking about this problem makes one realize that in the future the linguistic problem is likely to be much more serious than it is at present. That is why my colleague Mr. Hill, who is looking into the possibility of keeping literature records on a computer, is very interested in the problem of mechanical translation. A computer is a very expensive item. It is obviously much more likely to become an economic proposition to have one in the new library if it can be utilized for translation purposes as well as for keeping the library records. At the moment we are not clear whether a computer will be in use in the library in five years' or in twenty-five years' time. For the present, therefore, we are mainly concerned with using recording systems which could be easily reorganized and adapted for use on a computer when the time comes. To this end, and as a half-way house, we are seeing to what extent we can use Hollerith equipment for the library records. I would like to stress here that we are not thinking in terms of using the equipment for subject selection, but for such things as the library catalogue, for keeping loan and ordering records, and for preparing accession lists, etc. As you are probably aware, D.S.I.R. has kept its records of serials on punched cards for several years. Its union list of periodicals is one of the by-products of this system, and in the new library we hope to extend these arrangements to cover non-serial publications.

You may have got the idea from Dr. Urquhart's first lecture that we are thinking only of very long-term planning. This is not the case. D.S.I.R. works on a five-year plan and our immediate objective is to obtain figures of the probable cost of the Lending Library project for the next quinquennium, that is, for the years 1959–64. At the moment we do not know what resources will be available to us, but we hope to have rough plans prepared this year about:

a. Site requirements.
b. Initial building requirements.
c. The cost of building up the necessary back sets of publications.
d. The normal operating costs including cost of buying literature.
e. An initial research budget.

SITE REQUIREMENTS

We know we shall need a large site, one which will allow for expansion for a considerable number of years; assuming that literature continues to be used and stored in its traditional form. The main problem facing us at the moment is where in the country this site is to be. As the library is to be a lending library, serving the whole of the United Kingdom, postal services are one of the first things to be considered in choosing a site. These suggest that the library should be placed in the north-west of England or the West Riding of Yorkshire. Also, in the interests of its own staff we feel that the library should have a university or technical college near by. But these two conditions still leave far too many possible solutions to the problem. What we need is some other criterion which will enable us to select rationally from the possible solutions. One criterion we have thought of is the potential local use by direct visits to the library. We started to wonder about the radius of influence and the attractive power of libraries. We could not find any useful data on this subject, so we thought we had better collect some for ourselves. With the collaboration of several librarians we are carrying out a census of users of their libraries who come in person to seek scientific and technical information from the library. In carrying out this census we are seeking to discover not only what sort of people come to the library to use scientific literature but how far away they live and work. In fact, in the words of one question of the original draft of the census form which is intended to cater for travellers: 'Where did you sleep last night'. I hasten to add that in the final version of the form this question was modified to some extent.

Another feature which could have considerable influence on the site of the library is the possibility that it may act as a host organization to certain other smaller organizations doing work closely connected with it—something in the same way as is done by the British Museum and the American Library of Congress. We would certainly welcome suggestions about the site of the library from organizations who might possibly fall into this category in the future.

INITIAL BUILDING REQUIREMENTS

The main part of the initial building requirements are very easy to specify approximately. We shall need a store which will hold about one million volumes if it is to last for roughly twenty years. One of the problems which the architects will have to solve is how this building can be planned to be perhaps one of twenty similar stores eventually, the lot to be part of one system. Even with this initial building there is some doubt about how much service space will be required. Part of this arises from the suspicion that the present volume of interlibrary lending between non-lending libraries is well past the point at which it is economical for the borrower and the lender. Partly in an attempt to seek some evidence on this point Dr. Urquhart has invited librarians to notify us of serial publications for which the interlibrary loan demand is embarrassing.[2]

ACQUISITION OF BACK SETS OF PUBLICATIONS

Another capital cost item is the acquisition of back sets of publications. Many of these will have to be bought, but we are hoping that a certain number of them will be donated to or deposited with us. It is clear that if there is an efficient system for borrowing little-used material when it is required, there is less need to keep it in a special library established to serve a limited clientele. In addition, little-used material is always an embarrassment if you are short of shelving space, and, as far as I can see, the majority of libraries are in that position. We are issuing a general invitation to libraries to present to or deposit with us any literature which is surplus to their requirements.[3] Very briefly the position is that for the moment we are interested only in serial publications. Foreign serials for which six or more volumes are available can be sent without listing, providing we have a right to dispose of them if surplus to our requirements. Other material, e.g. British material, material for deposit and short runs of serials, must first be the subject of correspondence or discussion. When we have some idea as to the result of this invitation we shall be better able to estimate what funds will be necessary to purchase the back sets of publications we require—supposing we can find them.

It will, of course, be some time before we are able to set up a direct lending service, except perhaps for Russian material, which is in rather a special category. I would like to point out, however, that any material we may receive as a result of our literature appeal will be made available where necessary to supplement the Science Museum Library's service.

NORMAL OPERATING COSTS

The normal operating costs are another unknown factor. Here the main unknowns are the volume of the world's scientific literature which exists, the fraction of this which is worth-while collecting and how much it will cost to obtain. To begin with, we intend to concentrate on collecting the literature for which there may be no sizeable demand at any one point but which, nevertheless, it is essential should be available. It is not impossible under the present arrangements for collecting literature for a number of, say, university librarians each to consider purchasing a periodical, for all of them to decide not to take it, but for each to have some small need of it. To eliminate this sort of thing we have issued an invitation to librarians to tell us of any serials they may need but are not ordering themselves.[2] By this means we hope to keep pace with the tempo of future requirements. We are contemplating issuing pre-paid addressed postcards for this purpose and I should welcome your comments on this idea.

RESEARCH ACTIVITIES

One final word on estimating costs. It is hoped that our future budget will include an item for research on the flow of information, research that will cover both techniques and equipment. To put some figure down for this item will involve the drawing up of a research programme and suggestions are invited about this. Frankly, our own ideas on a suitable research programme are still very fluid. It is visualized, however, that the programme will include not only work to be carried out in the library's own research wing but also research which could be carried out elsewhere under contract.

RUSSIAN LITERATURE

I hope that what I have said so far has indicated to you that efforts are being made to plan the National Lending Library to meet the requirements of potential borrowers. The experience of the Science Museum Library, which must be regarded as the prototype of the new library, has provided us with a great deal of data which have been and will be invaluable in our planning operations. An analysis of the holdings of the Science Museum Library and later of other libraries confirms that one of the largest gaps in the national collections relates to Russian scientific and technical literature. In this connection you might like to note that we could find in this country only 49 per cent. of the Russian scientific and technical literature that the Russians were abstracting and that one-fifth of this was not available for loan. We have therefore started, as a priority item, to make as complete a collection of Russian scientific and technological literature as possible. We are buying all the Russian books and periodicals in our field that we can find and also pursuing a vigorous exchange policy to obtain Russian material which is not available for direct purchase. A few weeks ago we possessed no Russian literature at all. At the moment we have only three hundred books and have made arrangements to receive currently about two hundred periodicals. By the end of the year we hope, nevertheless, to have if not the largest at least one of the largest collections of Russian scientific and technical literature in the United Kingdom. Unlike the other literature we are collecting, the Russian literature will be available on loan direct from the Lending Library Unit itself. Our Russian loan service is not, I am afraid, in operation yet, but we are hoping to start it later this year.

USE DATA

Another survey we are making based on the Science Museum Library's experience has involved the punching of some 100,000 Hollerith cards. Each card relates to the supply of a serial publication on loan from the Science Museum Library or to a visitor to their reading room and shows the shelf mark, the date of the publication and the type of user, i.e. whether the publication was required by staff or students of the Imperial College, the staff of the Science

Museum itself, or any other organization. An analysis of these cards will provide data which can be used in many ways. They will, for instance, be of value in discussions with the Science Museum Library about the retention of some material in that library and the handing over of other material to the new library. The data will also be used in deciding for which titles and periods back sets of periodicals are essential, how many copies are required and whether or not they should be bound. Decisions of this sort involve not only the use data we are collecting but also some probability mathematics. You may be interested to know in view of other discussions at this Conference that Dr. Urquhart is beginning to regard an understanding of the use of probability mathematics in a library as a more essential requirement than a knowledge of cataloguing and classification schemes.

This use data we are collecting will also be used in conjunction with some work study data provided by the D.S.I.R. Work Study Unit in deciding the most economical storage arrangements for the new library. One interesting point which the Work Study data have shown is that for a normal library stack of six shelves the time required to select an item from the bottom shelf is about two-thirds greater than the time required when the item is on the third, fourth or fifth shelf. As a result of this, it looks as though we may have to start designing library stacks without bottom shelves.

A few minutes ago I mentioned the fact that the use data would be used to assist us in deciding our binding policy. It does look as though such considerations as cost of postage and availability of material will cause us to decide to delay as long as possible binding serial publications into volumes. To try to overcome the problem of the inevitable wear and tear which occurs when unbound copies of publications are sent on loan, we have asked the Printing, Packaging and Allied Trades Research Association for their assistance in designing a cheap form of binding for single parts of serial publications.

CONCLUSION

From what I have said, you can see that our long-term planning activities are mixed up with others of a more practical nature. The D.S.I.R. Lending Library Unit has come into being although it has not yet started to lend. The unit has some temporary accommodation in some Regency houses facing Regent's Park at 20 Chester Terrace, N.W.1 (Telephone Number Hunter 8361), and also some storage accommodation at Stanmore.

We anticipate that events connected with the new library will move swiftly during the next few months and that there will be many things we shall want to tell librarians about the progress we are making. We intend to do this by means of a news sheet. It will be called *L.L.U. News* and we hope to circulate the first issue during June. I am afraid it will be rather an irregular publication, as we shall only issue it when we have something to say. We shall be giving it a very wide circulation, however, and I hope you will all become very familiar with it over the course of the next year.

In conclusion, I should like to say this. Our basic instructions are to get a move on. Almost daily we seem to be making decisions about what we shall do and how we shall do it. These will inevitably affect the nature of the library we are creating. If you have any suggestions to make, 'Speak now or for ever hold your peace'.

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CHAIRMAN'S INTRODUCTION

The CHAIRMAN said that no doubt most delegates had some idea of the background of the project for a national lending library. As he understood the position, it was Government policy that there should be a national lending library for science and technology. That project had more or less gone ahead, and a team under Dr. Urquhart (who assured him Miss Bunn had done most of the work) was already engaged on it.

On the other hand, it was also Government policy that there should be a national science reference library sited on the South Bank in London. This would incorporate the existing Patent Office Library and have close liaison on the same site with the libraries of many of the learned societies now based on Burlington House. For financial reasons, this second scheme was held up.

He was a little envious of Miss Bunn and her collaborators. It was exceedingly unusual in this country, with old traditions and old-established methods, for anyone to be able to start a project of this size from scratch. The field was fairly clear and very sensibly the team had asked, while the plans were still fluid, for contributions on how the scheme should be run. This was a golden opportunity. If they missed it, they could hardly complain later that it was not all they wanted.

DISCUSSION

MR. M. WRIGHT (Royal Institute of British Architects) asked whether organizations might now send in serial publications for which they had no further use.

Secondly, was it proposed to take over the Science Museum's photocopying service?

MISS BUNN said that serial publications might now be sent to the Lending Library Unit without previous notification providing the limitations already mentioned about the material being foreign and consisting of a reasonable run were observed.

It would be advisable to inquire in writing about other material, i.e. short runs and British publications.

Until the stage was reached where two photocopying services would be economic, use would be made of the Science Museum's service.

Apart from Russian material it was proposed that lending should also be done through the Science Museum Library.

MR. R. M. FISHENDEN (United Kingdom Atomic Energy Authority) drew attention to an earlier suggestion by Dr. Urquhart that the National Lending Library might delegate responsibility for particular fields of information to other organizations. Atomic energy seemed to be a suitable field, he said, and he would be interested to know how matters stood, as preparations were being completed for a new library at Harwell. If there was any possibility of delegation in this field, perhaps the present opportunity might be taken to find out from users what they thought about the inconvenience or otherwise of such an arrangement.

MISS BUNN replied that the question of delegating to specialized libraries responsibility for particular fields of information was being considered.

On the whole, the conclusion was that, with the possible exception of atomic energy, division by subject would not be satisfactory. It might be possible to divide off certain definite classes by type of publications; for instance, patents or standards. No definite decision had been taken, however, and she would be glad to hear the views of those present.

The CHAIRMAN asked if he might use his position as Chairman to implore Miss Bunn to see that any hiving off was done on clearly specified lines. He agreed that division by subject was most difficult and said he would be happier with division by language. It would not worry him if all the Chinese material was elsewhere. But division by subject or form of material, unless clearly specified, would only make trouble.

MR. P. F. COLE (The British Petroleum Co. Ltd.) said he gathered that it was the intention to dispatch even large bound volumes through the post. He felt there was no future in that procedure. Had serious consideration been given to a policy, right from the start, of dispatching not originals but photostat copies? This should reduce expenditure on postage and also eliminate the annoying delays which follow notification that the material will be sent when the present borrower returns it to the library.

MISS BUNN said it was not anticipated that material used to any great extent would be bound, except by parts. Bound volumes made material less available and considerably increased the postage costs. Back sets might only be obtainable in bound volumes, of course.

As to photocopying, scientists usually preferred material in the traditional printed page. An even more serious difficulty than this, however, was that under the new Copyright Act it might be impossible to make photocopies to supply on loan.

MR. JACK BIRD (Aslib) asked whether it would not be an advantage to use microfilm and supply photocopies to avoid the difficulty of coping with bound volumes.

MISS BUNN replied that again there might be copyright difficulties. It was hoped that much material would be unbound and that such as was bound would not be used to any great extent.

Some material had come in already and the amount received in single parts and not in bound volumes was surprising.

MR. P. C. J. ALLMAN (Imperial Chemical Industries Ltd.) inquired whether publishers of journals had been asked if they would be prepared to license the lending library and give permission to copy material in which they had a copyright, either free or for a nominal or standing charge, or perhaps under a royalty system.

MISS BUNN said that publishers had not been approached in any way. The D.S.I.R. was waiting to see how things went after the new Act had been put into force.

MR. J. G. HALL (Esso Research Ltd.) asked whether it was proposed, in the new scheme, to provide a specialist bibliographical service for people requesting, say, a standard book on a particular subject.

One of the main disadvantages of existing loan schemes was the need to provide full bibliographical details. While this presented little difficulty in one's own field, it was not so simple if, for example, a specialist in sewage disposal working in a remote area required at some stage a standard text-book on electronics. The necessary bibliographical equipment might not be available to enable him to make an effective loan request.

Secondly, what was to be the policy with regard to material of a semi-trade nature? There was a good deal of material of the greatest possible value that did not come from normal publishing circles.

MISS BUNN said it was not proposed to set up a large information service. It was hoped that most requests would come from or through libraries which would be able to supply correct bibliographical details.

There would be a complete set of bibliographical tools, abstract journals and so on in the Library and a fairly liberal policy would be adopted in checking references where there was a good reason for an incomplete reference being supplied. After all, the terms of reference were not only to set up a lending library but also to promote the use of scientific literature.

With regard to material of a trade nature, the idea was to collect everything that would be of interest to research scientists and to industrial and agricultural users. Trade journals would be collected if there was any scientific or technical information in them at all.

Literature of a semi-published nature would be taken provided it contained material not published in another form elsewhere and provided it had no confidential restriction on it whatsoever.

MR. J. FARRADANE (Tate & Lyle Research Laboratories) asked how the new lending library would fit in with the present Science Library. He pointed out that in 1948 the Royal Society

Conference passed a resolution asking the Government to see that *all* literature of any value should be available in two or three libraries in this country. Despite increases in collections, it was clear that this policy had not yet been implemented. He had at least a dozen items in his own library that were not available elsewhere. The number of such inaccessible journals must be very large and it was difficult and expensive to obtain single copies from abroad.

The National Lending Library would afford an opportunity to collect material which might not often be wanted, but which should be publicly available. This material need not all be in the one library. It could be made available at some of the other libraries to meet the needs of industry.

MISS BUNN replied that it was intended that the new library would have in its collection all the literature likely to be needed in the scientific and technical field. Particular attention would be paid to collecting material unlikely to be available elsewhere in a library specifically designed as a lending library.

Apart from Russian literature, at the moment the new library would make very little difference to the Science Museum Library services, except that the material collected would be used to supplement those services. It was envisaged that during the next few years the new library would take over the lending functions of the Science Museum Library. They had yet to decide when and how this function would be taken over but it was likely to be a gradual process.

MR. R. G. GRIFFIN (The Chemical Society) said he wanted to dispel an illusion that might have been created by the Chairman relating to the Science Centre. The original proposals provided for bringing together all the societies in Burlington House, the Patent Office Library, D.S.I.R. headquarters and its associated document centre, and so forth, and also—he believed, though he might be wrong—the scientific lending library.

The proposals now under discussion and the statements made that morning and in the Commons and elsewhere suggested that the lending library service would go forward in the hands of the D.S.I.R. But there was nothing to suggest that the Science Centre and the National Reference Library were going ahead. Indeed, the Chemical Society had recently modernized its premises at Burlington House, on the assumption that they would be wanted for at least ten years. He would be glad if anyone would correct him on that point.

With regard to the proposals put forward by Miss Bunn, he was not entirely convinced that the lending library should be out of London. The one merit of the Science Museum Library, with all its faults, was that books could, if necessary, be obtained on the same day. If it became necessary to rely on the postal services, they must remember that the G.P.O. was not infallible. The aim should be to get the book into the hands of the borrower the day after the inquiry was received. That was the aim at the Chemical Society and it was reasonably successful. The Science Museum Library seemed to fall down in that the date stamp was, say, Tuesday, but the postmark on the outside was Friday or Saturday. Obviously, something went wrong in the packing department.

For the lending library to function correctly a book would have to be taken from the shelf and dispatched the same day as a matter of urgency.

While he endorsed Mr. Farradane's statement that this was an excellent opportunity to get together a national collection, it was vital that there be not only a lending collection but a completely duplicated reference collection, preferably in London.

MISS BUNN said she had no inside knowledge about the National Reference Library and the Science Centre.

The decision to establish the lending library outside London was made by the Advisory Council on Scientific Policy. It was never intended that the lending library should be in the Science Centre. The instructions received by the D.S.I.R. were to plan the library. It was envisaged that the National Reference Library would be in London, and that it would be waste to have the two libraries too close together.

She believed that in an article published in the *Journal of Documentation* not long ago Dr. Urquhart had calculated on the basis of periodicals in the *World list of scientific periodicals* that the percentage of scientific periodicals available in London would fall from about 88 to 72 per cent. if the Science Museum Library were moved out of London. That was not such an enormous drop. It was still well above the percentage available in all libraries together outside London.

It was hoped to give a 'return by post on the same day' service. If a request was received at the library by the first post and the material was in the library, it should be dispatched by the evening and reach the requestor the next morning. No doubt this was an ideal situation but she hoped it would be achieved.

MISS M. I. WYATT (J. Lyons & Co.) suggested that in the case of semi-published material it would be necessary for the library to issue lists of its holdings as this type of material was not normally documented through the conventional channels.

She asked whether the new Copyright Act did not provide for the licensing of non-profit-making libraries for photocopying.

MISS K. E. WATKINS (Patent Office) said that plans for the new Reference Library of Science and Technology were now under consideration again and it was thought that something might be done about a new building on the South Bank in the early 1960s, but as she went to the Patent Office Library in 1950 on the understanding that they would be in a new library by the end of 1952 and nothing concrete had been done yet, she could give no firm statement until building actually commenced.

MISS BUNN said that it was hoped to issue lists of semi-published literature and here it would help to have the catalogue on Hollerith cards.

They were trying to evolve a scheme whereby holdings would be entered on punched card equipment so that various lists could be produced, using the Hollerith machines, with the minimum amount of trouble.

She did not want to become involved in the copyright question. She was not qualified to to go deeply into the matter.

The CHAIRMAN thanked Miss Bunn for her extraordinarily informative lecture which she delivered so clearly, telling them precisely what they wanted to know about a subject that intimately concerned their daily work.

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All the above items may be borrowed from Aslib Library, except those marked with an asterisk. Most of these are available for consultation in the Library, apart from a few for which locations in other libraries can be given by the Librarian.

ASLIB INFORMATION

ASLIB CALENDAR

SEPTEMBER

MONDAY 23rd–WEDNESDAY 25th. Junior Introductory Course to Information Work. See paragraph below.

OCTOBER

MONDAY 21st. Winter meeting. Subject: see paragraph below.

THURSDAY 24th–FRIDAY 25th. Northern Branch conference at Chester.

WEDNESDAY 30th. Conference on Library Services in Technical Colleges.

NOVEMBER

WEDNESDAY 27th. 2.30 p.m. Northern Branch meeting in Burnley.

Visitors to Aslib

Sir John Wolfenden, Vice-Chancellor of Reading University, and Dr. T. E. Allibone, Director of the Associated Electrical Industries Ltd. Research Laboratory at Aldermaston, have been appointed official D.S.I.R. Visitors to Aslib. Their appointment extends to Aslib for the first time the Visitor system which has operated so successfully for many years between the Department and the Research Associations. The Visitors are available to discuss and advise on general policies and to give independent advice to the Department whenever an application for Government grant is made. Aslib is singularly fortunate in the choice of two such eminent persons to take an interest in its work, and trusts that they will enjoy their association with Aslib as much as Aslib will enjoy their interest and help.

Winter Meeting

The first meeting of the season will be held at 6 p.m. on Monday 21st October at the Royal Society of Arts, John Adam Street, Strand, London, W.C.2. Tea will be served at 5.30 p.m.

Mr. G. Woledge, Librarian of the British Library of Political and Economic Science, will comment on the Copyright Act, 1956, as it affects the work of librarians. Representatives of a number of organizations concerned with the copying of documents for research and information work have been invited to attend and to explain the effects of the new Act on their particular services.

Junior Introductory Course to Information Work

This course will now commence on the morning of Monday 23rd September and end at lunch time on Wednesday 25th. It will be held at Aslib, 4 Palace Gate, London, W.8. The course is intended for new entrants to special library and information work and will cover basic techniques, types of material used (with emphasis on periodicals), methods of dealing with simple inquiries, the use of catalogues and indexes, and professional study and development. Visits will be made to the Science Library, the Patent Office Library, the Mond Nickel

Company's Information Section, and Aslib Information Department and Library.

The lectures will be given by Mr. R. L. Collison, F.L.A., Librarian, Westminster Reference Library.

Notices have already been distributed to members with the August issue of *Aslib Proceedings,* and anyone wishing to take the course who has not already applied should do so immediately, as only thirty enrolments can be accepted. The fee is 5 guineas.

Fuel and Power Group

On Friday 27th September members will visit Leatherhead to see the library and laboratories of the British Coal Utilisation Research Association and the Electrical Research Association. A visit to the Bankside Power Station is planned for late November, details of which will be announced later.

Chemical Group

Members are asked to note that the new Honorary Secretary of the Group is Mrs. K. M. Bonneywell, John Wyeth & Brothers Ltd., Clifton House, Euston Road, London, N.W.1.

Mr. H. H. Johnson

Members will have learned with regret of the death, on 3rd August, of Mr. H. H. Johnson, a Director and former Editor of *Engineering*. Mr. Johnson had been actively associated with Aslib for nearly thirty years and was one of the first Honorary members. He was elected to the Council in 1936 and was Chairman of Council in 1939–40. We offer our sincere sympathy to his son and daughter.

New Translation Service

The Iron and Steel Institute, in collaboration with a number of companies in the industry, is to set up a Co-operative Translation Service. There will be a central pool for translations made by individual companies and it will be supplemented from other sources. An index is being compiled of available translations made since 1950, and news of new translations and those in course of preparation will be circulated to their members by the British Iron and Steel Research Association, the British Iron and Steel Federation, and the Institute.

The service is designed primarily to serve the needs of the iron and steel industry, but will be available to all who wish to make use of it.

As soon as the index is complete the Institute will make a further announcement, inviting applications for details and price lists.

Index to Theses, volume IV

The fourth volume is now ready and in course of distribution to those who have already ordered copies. It covers the academic year 1953–4, and comprises a classified list of theses accepted for higher degrees in the universities of

Great Britain and Ireland, with alphabetical indexes to authors and subjects. The editor is Magda Whitrow, B.A., A.L.A. Price 21*s.* to members of Aslib, 25*s.* to non-members.

Journal of the Royal Agricultural Society

Librarians who hold sets of the *Journal* may like to know that a general index has recently been published, covering volumes 87–115, 1926–1954. Copies of the index, price £1, are available from the Secretary, Royal Agricultural Society of England, 35 Belgrave Square, London, S.W.1.

A number of copies of the index covering volumes 62–86, 1901–1925, are also available at the same price.

National Petroleum Bibliography

Our attention has been drawn to the *National Petroleum Bibliography*, a new bi-monthly publication. The entries, which do not include abstracts, are arranged by the Uren decimal classification with a detailed subject index. Each issue contains nearly 200 pages. The annual subscription is $35 and the address is Box 3586, Amarillo, Texas.

Proposed Guide to West Midlands Library Resources

The West Midlands Group of the Reference and Special Libraries Section of the Library Association has decided to compile and publish a *Guide to Library Sources in the West Midlands Area*. In order to collect the necessary information a questionnaire has been sent to library headquarters and to academic and special libraries in Herefordshire, Shropshire, Staffordshire, Warwickshire and Worcestershire. Any librarian in this area who has not received a copy of the questionnaire is asked to contact Mr. Brian G. Staples, Reference Library, Ratcliff Place, Birmingham 1. Those who have received questionnaires are asked to complete and return them as soon as possible.

National Science Foundation Publications

Lists of National Science Foundation publications are available from the Publications Officer, National Science Foundation, Washington 25, D.C.

MEMBERS' ADVERTISEMENTS

MANUSCRIPTS—books, theses, articles—typed with affectionate care. Research intelligently prepared American and English only Work called for and delivered within reasonable distance. B. M. Collins, Furnace Cottage, Robertsbridge, Sussex.

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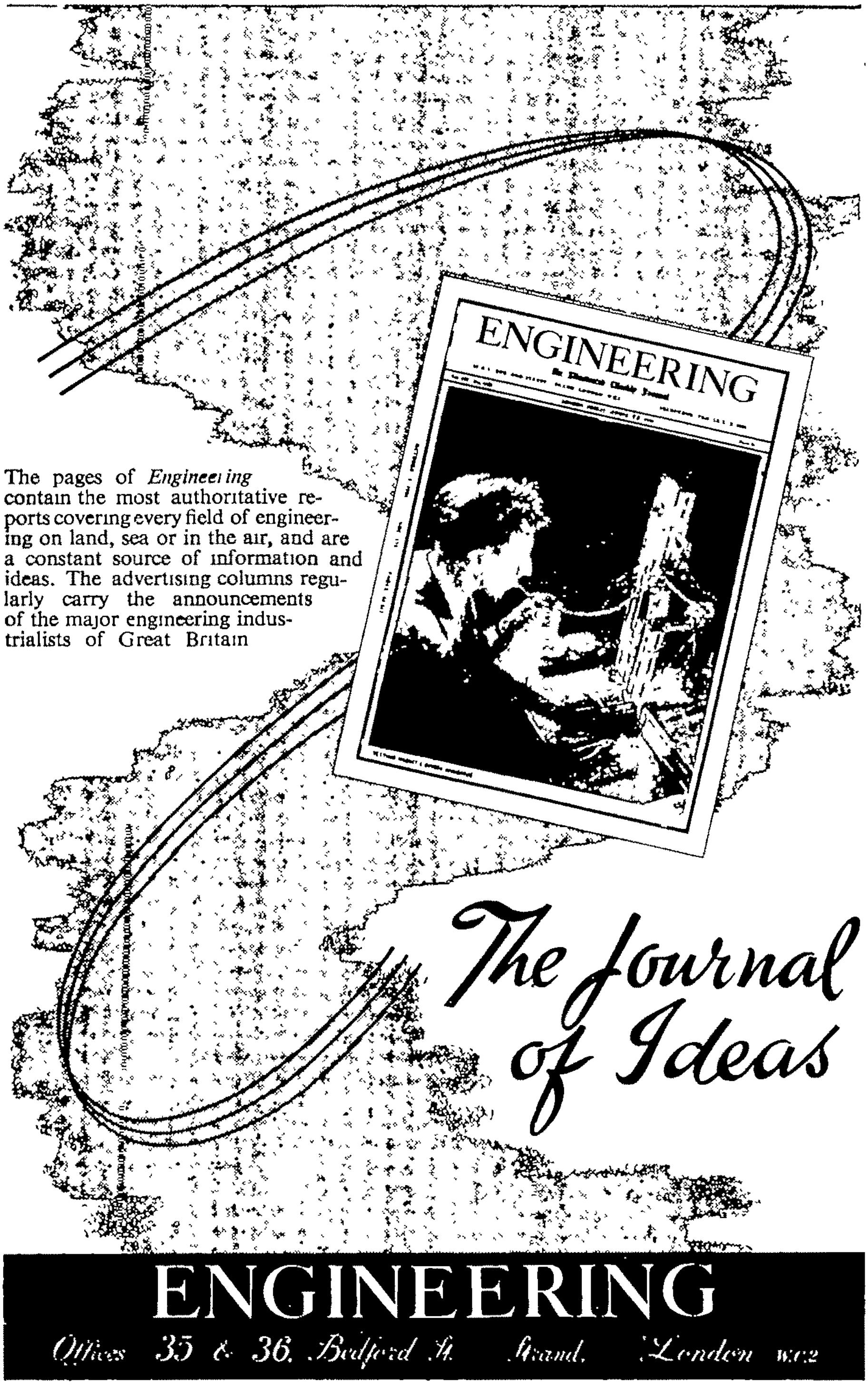

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Volume 9 **October 1957** **Number 10**

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INFORMATION METHODS: ADAPTATION TO GROWTH

BY R. E. FAIRBAIRN, B.SC., PH.D., F.R.I.C.

Head of Library Department, Imperial Chemical Industries Ltd., Dyestuffs Division

32nd Annual Conference, Scarborough, 21st May 1957*

WHEN I was first invited to give this paper it was suggested that it might be one of two or three papers dealing with a planned information service. The title has now been changed to 'Information methods: adaptation to growth', but I think this still implies there is a considerable amount of planning to do. However, after some weeks of unproductive thought upon this subect I stopped trying to think about planning the growth of an information service, and I started to think about why I couldn't think about the planning of the growth of an information service—quite a different matter.

The truth was that a planned information service was something that just didn't exist. How to plan the growth of something that didn't exist was quite beyond me.

By this time you are all wondering what I am getting at. The point I really want to make is that I am not going to talk upon planning of an information service and methods and their adaptation to growth, because I think any implication that one can plan an information service upon any common pattern, or in the sense that you can plan a building, is quite wrong. Such planning that there is must be directed in an almost day-to-day manner to providing and improving services to meet the needs of the organization or unit which is being serviced. These needs, as well as the information services, may also change from day to day. In order to provide the right services I would suggest that no amount of formal training, qualifications or theoretical considerations are of much help, but of much greater importance are common sense in a very large measure, experience, adaptability and, above all, a sound knowledge of the user's requirements. To develop a service suitable for, say, a newspaper office is quite different from developing a service suitable for a sales office or for a research department, or for a production unit or an engineering department.

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* The two papers presented at the morning session, by Mr. E. Martindale and Miss R. M. Bunn, were printed in the September 1957 issue of *Aslib Proceedings*.

In this paper I would like to take a number of themes, some closely, some more distantly, connected with the title of the paper. I hope these themes will give you something to think about on the subject of developing an information service to suit particular needs.

I would first like to give you a description of two types of, shall we call them information services? The first of these information services is obviously on the way up. It is a simple little advertisement, and it reads as follows:

> 'Librarian/shorthand-typist. Interesting position in Research Department offered to experienced shorthand-typist to combine with responsibility of a technical library. Five-day week. Pension.'

Now that person, if wise, when well established will take upon himself or, more probably, herself, the title of Information Officer, or perhaps, even better, Intelligence Officer. It won't make any difference to the work he is doing but it sounds a little more impressive.

Now we come to the very highly developed information service. I have taken this from an editorial of the *Manchester Guardian* about a year ago. 'American business men crave for information. The reports, the sales analyses, the thick volumes of statistics that clutter up their desks serve only to quicken this thirst. Nothing will satisfy them except that they shall know precisely what their rivals are up to. To meet this demand battalions of seasoned operators are regularly at work stealing business secrets. An account of their methods makes interesting reading. Although much useful information can be salved from wastepaper baskets, a truly professional competence demands a knowledge of electronics. Hidden microphones and tapped wires are the stock-in-trade of the best suppliers. More refined techniques include the use of a telephoto lens to record conversations through open windows. A lip-reading expert is then used to translate what is captured on the film. At one time it was a standard practice to take pictures of the latest motor car models by flying low in a helicopter over the designer's studio, but now there are electronic devices that will draw the curtains whenever aircraft flies near by. Business men are not the only people who treasure secrets. A lazy newspaper man might save himself much hard leg work by tapping a rival's wire. A hidden microphone in the headmaster's study would surely enhance the prestige of any sixth-former and, though in London the helicopters must keep to mid-river, the studios of Chelsea, which never have curtains, are visible from there. Who knows, perhaps a long-distance cameraman in the Horse Guards Parade might discover what goes on at Cabinet meetings, unless he finds them all asleep.'

You will see from this the almost unlimited possibilities in this information work. What I want to do this afternoon is to try to stimulate your thoughts into perhaps somewhat unusual lines. After all, I could very easily say 'Information methods—adaptation to growth'—well, you proceed in the following steps: firstly you plan your layout; secondly you recruit suitable staff; thirdly you plan your methods; fourthly you arrange your organization so that there is both a reasonable amount of overlap and a reasonable amount of specialization; fifthly you decide what services to be given; sixthly you give those services. Had I planned a paper of some 10,000 or more words along these lines

I am sure most of you would have politely acknowledged at the end, although your thoughts throughout the paper might have been far away.

I propose now to work along a number of themes which will not have as their object how to plan an information service and its growth. I would not dare to do that, since only the person on the spot can develop his service for any one set of circumstances at any one given time and with one given set of persons to service. (It is remarkable, for example, how the whole outlook of a service may change because Mr. X replaces Mr. Y as research director or development director, or managing director.)

The themes that I propose to deal with are the following:

a. The stages of development of information and related services.
b. Apparent differences between scientific and technological information and intelligence work, and commercial and economic information and intelligence work.
c. Management of the service.
d. The future. Expectation and realities.
e. Mutual co-operation and Aslib's role.

STAGES OF DEVELOPMENT OF AN INFORMATION OR INTELLIGENCE UNIT

In running through the stages of the information or intelligence unit or the levels of activity at which the unit operates, I am referring in the main to units concerned with technical and related work; nevertheless it appears to me that precisely the same differentiation can be made in the case of units working in commercial, economic, social and other fields. Neither do I wish to concern myself in any way with the comparatively trivial matter, made into mountainous proportions by some, as to whether any particular level should be controlled by librarians, information officers, intelligence officers, and what-have-you. I will limit my remarks on this point by saying that the person in charge, whatever his basic training, should be capable of controlling the work of his particular unit in a suitable manner.

At the lowest level there is the simple care-taking of books and periodicals which have been purchased by or on the recommendation of members of the technical staff. This kind of care-taking, often associated with a certain amount of clerical and typing duties, is found in many small research, development, analytical, production and other units.

To the care-taking of books and periodicals will be added a certain lending and circulation service, and to this will be added, perhaps, the simple care-taking of internal documents such as technical reports. The general handling of internal documents and correspondence could not be regarded as very high-level activities, if and when done in a general way. There is, however, no doubt in my mind that a full analytical indexing of highly technical documents upon a variety of subjects, to provide an index and a source of information for likely future users, is a highly skilled and experienced job if it is to be done in a manner to yield the greatest dividend in the future. By careless or incapable indexing it is possible that a piece of technical work, costing many thousands of pounds, is either ultimately lost entirely or its value much reduced by certain aspects not being made available through the appropriate indexes when memory ultimately fails. I mention this at some length as Mr. A. R. Smith, in his provocative paper at last year's Conference upon 'Economic intelligence work', did not rate very highly indexing and related work. The important point to remember is that scientific and technical work has a much more permanent value than has, generally, statistical, commercial and social information. Adequate indexing, therefore, becomes all the more essential.

At the next level there is the critical selection of information, to be passed to interested recipients. This can be done either as an individual service or, as is more usually the case in the large organizations, by means of a bulletin service. At about this stage in the development there should be provided a good information service, particularly on general matters, and there should be a good information service upon sources of information. This is perhaps the stage reached by the majority of the larger information and intelligence units within the technical field today.

At the next level the senior members of the information and intelligence unit tend to become more detached from the day-to-day provision of the services offered by their unit, and their efforts are directed in two ways. Firstly, they will view critically the services offered and whether these are serving the purposes for which they are designed, and, secondly, they become users themselves of the services of their unit in providing surveys and other information of a selective or critical nature. For this purpose it is necessary for the senior staff to be in touch in a full measure with the activities of the firm or organization to which they are attached. They must keep themselves right up to date on current affairs. At this stage decisions will be made in matters such as, e.g. patent handling practice, reporting practice, standardization of nomenclature, as well as in the most usual administrative problems associated with running any industrial or other unit.

At perhaps the highest level there is the direct advisory service to senior management or directorial level. I am inclined to think this level is seldom if ever reached in the case of information or intelligence units on the technical side, since the fields of science and technology are so highly specialized that it would be asking an impossible task of anyone covering such a wide field within a firm or organization to act as an advisor on specialist technology. This, of course, does not apply in economic and commercial fields to anything like the same extent.

DIFFERENCES BETWEEN COMMERCIAL AND ECONOMIC, AND TECHNICAL, INFORMATION AND INTELLIGENCE WORK

As my second theme we may now consider the differences between commercial, economic and technical information and intelligence work. I propose to carry this further and consider the differences between other kinds of information and intelligence work. Even within technical fields there is a considerable difference in the kinds of service that should be provided to be most useful. First I would like to consider how commercial and economic work compares to scientific and technical work. This was a subject of the very interesting and provocative paper at last year's Conference by Mr. A. R. Smith which I have mentioned earlier. He drew a number of conclusions which are, in my opinion, in general quite correct, but I will qualify this by adding that they are not a complete analysis of the reasons why there should be these differences. One inference was that economists and persons of similar training and employment occupied superior positions in relation to direct service to senior management than do generally technical and science graduates employed on technical information work. This is no doubt very largely true, but it has arisen because of the different development of the various kinds of information and intelligence services, rather than because of the fundamental differences between the two. Generally, a technical information unit is developed from the very simple beginnings, illustrated earlier in this paper by the quoted advertisement for a 'Librarian/Shorthand-typist'. Commercial and economic units have usually been established by the appointment of the senior person or persons who hold immediately a substantial position in the organization. From there the unit is built downwards. One unit, in fact, has already got the recognition by its appointment and establishment, whereas the other, the technical, has very often had to fight for recognition over many years. Another important point of difference is that the technical and scientific work today is so specialized that it would be difficult for any person on the technical side to become the equivalent of an economic advisor to an organization. He could, in fact, merely act as a co-ordinator of advice from others. If we keep in mind these two main differences between commercial and economic and scientific and technical information and intelligence units, firstly that one has tended to grow from very small beginnings and lowly qualified personnel upwards and the other from highly qualified personnel downwards, and secondly, that the kind of material collected by an economic and commercial unit is much more ephemeral in nature, with consequentially different treatment, than that collected by the scientific and technical unit, I do not think there are in fact any fundamental differences, other than the differences that always do, and will, exist between one information and intelligence unit and another. Such differences may equally well arise between units working in much the same subject field. By analysing requirements and usage the handling of engineering information will be found to be very different from the handling of chemical information. Engineers tend to be very much more down-to-earth than chemists in their requirements. They require good sets of standard specifications; they require good working handbooks, but they have not the same interest in retrospective searching as have chemists. All of this is revealed in a common-sense approach to the development of an information service suitable for engineering. Even within the broad field of engineering itself there are quite different servicing problems arising within, say, the information unit attached to a large construction firm and that attached to an aircraft firm or an electrical engineering firm. Furthermore, there can be no sharp distinction from one kind of unit to another. Both commercial and technical interests are involved in problems such as a survey on the manufacture and marketing of a range of new products, or of by-products. I suppose just as one can have a 'chemical engineer', so one can have a 'chemical economist', or should it be an 'economical chemist'?

MANAGEMENT OF AN INFORMATION SERVICE

The third of my subjects in connection with the growth of an information unit is the management, i.e. the organization and administration. At the earlier stages there will be considerable interest in such techniques as cataloguing, classification, general office and library routine, circulation of periodicals and so on. The importance of these should not be underestimated, because it is only by using sound techniques that the day-to-day business of the unit will function efficiently, but once these routines have been established it is not, in my opinion, part of the duties of the senior staff, of the larger units at any rate, to watch over them constantly. A lot could be said about the establishment of the best methods and techniques, and the part that scientific method in interpretation and use of information can play, but this is the subject of a talk by Mr. Rivett which is to follow this paper. On the assumption that techniques and methods are essentially sound, there are then some quite important decisions to be taken by the head of the unit, and perhaps his senior staff, as to their functions. There is at the higher level of an information unit the day-to-day administration and management; liaison with other departments, and units in the particular organization; assistance to and liaison with the management; contacts with other organizations (both personal and by correspondence) and personal work of a critical evaluation and survey nature, which can only be done at the top of the information or intelligence unit. I think it would be evident from Mr. Smith's paper that in the case of economic and commercial units far more time is spent by persons at the top in the latter function, namely work of a personal nature, than is spent in general administration of the unit. It seems to me to be almost an individual decision to make as to the time to be spent between personal work and general administration. For example, in some large libraries, e.g. university libraries, it has been the custom to appoint, perhaps, scholars rather than administrators as the librarians or heads. There is perhaps an analogy here to the work performed at the top end of information and intelligence units.

THE FUTURE. EXPECTATIONS AND REALITIES

My next theme is the future. Here a certain amount of debunking is necessary. There have during the past ten years or so emerged a number of very excellent new techniques for use in information and intelligence work. There are, for example, adaptations of punched card machines and, a stage further, electronic computers. On the smaller scale there are methods, marketed commercially, for using punched cards of various types, both edge punched and body punched; there are newer copying methods; there is microfilming and micro-recording in all its forms. All of these methods have been, and will continue to be, extremely good servants. It is to be regretted that over-enthusiasm, not so much by the makers of the equipment but by a small number of people within information and intelligence units, tends to exaggerate the value of many of these servants. The unwary may be led into believing that in a few years' time an entire information service will be so thoroughly mechanized that all that will be needed will be to push a few buttons and collect a few films or printed cards. There are also, in other directions, certain mystiques or special cults growing up, with special jargons not understood outside the inner circle. For example, it has been stated that in classification there are now some 350 special terms. Some of the papers that have been printed on this subject during the last few years are quite unintelligible to me, and some of the higher mathematical treatments of information problems I now judge not to be serious, but a curious form of leg-pulling. The attempts to analyse information and provide indexes so that you can get an immediate answer to an inquiry such as 'How many children aged 8, wearing yellow socks and riding green tricycles, were knocked over and injured by five-ton lorries in the municipal county boroughs of England with populations between 100,000 and 300,000 during the years 1950 to 1953', is countered by saying 'Who the hell cares anyway'. And if anyone did care it would be better to spend a week getting out the information than a month putting it in. This I suspect is the answer to most of information which is most elaborately classified and indexed by the latest bifunctional, fourth-dimensional, multifaceted, cross-angled or similarly named classification system. I would like to suggest two things to you. If anyone knows his subject, and his customers, and the purpose of his existence, he will pretty soon develop a good classification system for his own purposes, whether he uses one of the long-existing simple systems or adapts the principles to suit his purpose. If he is not capable of doing that, he is not capable of taking on the management of an information or intelligence unit. There is another point that tends to be overlooked with mechanical and elaborate indexing methods as compared to simple card or similar systems, namely that you can never get out of an index more than you put in it in the first place. It does not always pay to index extensively. It may be cheaper and more economical altogether to index generally or broadly and make searches as need arises; by so doing there may not only be a saving in overall time but it is more than likely that information which would be concealed by detailed indexing will be revealed in a much more general index. Nevertheless it must always be remembered that different circumstances require different types of indexes. In yet another way there may be disadvantages attached to automation as applied to information work, namely the tremendous value of browsing, or finding something that has not primarily been sought. Perhaps the major part of the useful information, particularly in research and development work, is found in this way.

MUTUAL CO-OPERATION. ASLIB'S ROLE

My fifth and final theme is to consider the persons engaged in information and intelligence work, and the part they could and should play in a growing unit. In doing so I should like also to touch upon the work of Aslib. Generally speaking, there are two sources of recruitment to information and intelligence work. Firstly by those who have been professionally trained as documentalists in some form or other, and secondly those who are recruited from outisde, such as scientists, technologists, economists, commercial administrators, etc. At the risk of being very provocative and receiving strong opposition, I will say that in my opinion the value of recruitment of experienced persons from outside sources has been much underrated in the past, and that any critical work at the highest levels performed by information and intelligence units must be performed by such persons. Such persons, *if the right sort of persons,* will have no difficulty in acquiring sufficient knowledge of methods and techniques to run their unit efficiently for the purpose which it is to serve. For the rest, possibly a balanced combination of 'professional' documentalists and persons with experience in other fields would probably be a desirable combination. I cannot agree that a really efficient information or intelligence unit can be effectively run by persons who have not had considerable experience in the background interests of the organization they serve, in other capacities than that of a documentalist. I would agree, however, that quite efficient libraries, using libraries in the widest sense of an information-giving centre, could be organized by 'professional' documentalists and librarians, but this is not quite the same.

Let us consider the part which Aslib is to play in the future. It is most important that not too narrow a view shall be taken of the functions of Aslib, for it is the only body that can effectively bring together a great number of people who are concerned with the preparation, collection, storage, dissemination, presentation and utilization of information in all its aspects. If we are to limit Aslib's activities to so-called information units and libraries, then surely we are missing very much.

The following is a brief outline of the range of activities which Aslib might cover in the future.

PRESENT AND FUTURE OBJECTS, ACTIVITIES AND MEMBERSHIP

A brief and non-comprehensive analytical survey

1. *Objects of Aslib.* To act as an association for research, education and co-operative servicing in all forms of documentary and information work.

2. *Membership.* Both corporate and personal, open to all interested in any of the activities.

Field of activities in documentary and information work.	*Those interested—Corporate or personal (possible members).*	*Interests (possible activities).*
Preparation	Authors. Editors. Publishers.	Collection of material. Presentation of information. Compilation of books, periodicals, pamphlets, etc. Good publishing practice. Good printing practice. Documentary reproduction and its economics.
Collection and storage	Libraries. Archives. Central Registries. Translators.	Problems of collection, binding, storage, classification, cataloguing, indexing, etc.
Dissemination and presentation	Information Depts. Intelligence Depts. Abstractors. Indexers. Publishers. Public Relations. Social Science Organizations.	Retrieval of information. Dissemination methods. Forms of presentation. Visual display. Films.

Field of activities in documentary and information work.	*Those interested—Corporate or personal (possible members).*	*Interests (possible activities).*
Utilization	Scientists. Technologists. Economists. Authors. Editors. Newspapers. Periodicals. Information Units. Intelligence Units. Publicity Depts.	Effective utilization. Costs. Methods. Sources of information. Evaluation and improvement of abstract periodicals and like services.

3. *Activities of Aslib.* To meet requirements above.
   - *a.* 'Operation' research into new projects.
   - *b.* Educational.
     - *i* In special themes and advanced courses.
     - *ii* Training in general methods, including utilization (but perhaps only if no other body can provide suitable training).
   - *c.* Liaison with other societies and bodies interested in documentation work.
   - *d.* Consultative service primarily to give sources of information and methods of utilizing information, and not to act as an information centre itself.
   - *e.* Publication of matter of interest, research results, etc., in the fields of documentary and information work.

CHAIRMAN'S INTRODUCTORY REMARKS

The CHAIRMAN (Mr. R. M. Fishenden) said that in his experience most of those who were concerned with information services and library work were so busy coping with work that must be done that day that they had no time at all to sit back and think ahead, to reflect on what they ought to be doing and how they ought to be doing it. It was one of the great merits of conferences such as this that it gave them a day or two to sit back and think.

They were fortunate in having with them that afternoon to stimulate thought Dr. Fairbairn, of the Dyestuffs Division of the Imperial Chemical Industries Limited, and Mr. Rivett, Head of the Field Investigation Group, National Coal Board. It was Mr. Rivett's first appearance at an Aslib conference and they all welcomed him and hoped he would come again.

There were several approaches to the problem of what they ought to be doing and how they ought to be doing it. First of all, they could examine the internal organization of their information service and seek ways of improving it based on their own knowledge of the organization they were serving.

Secondly, they could try to put some value on the service. Was it giving value for money? That must be mainly a subjective judgment but sometimes some quantitative analyses could be made.

Thirdly, they could look at the user end. Was the man who wanted the information getting what he wanted and, incidentally, how was he getting it?

Mr. Martindale had described some investigations on the latter lines in the transmission of information to small-scale industries, but there was a deplorable lack of knowledge on how information reached the user in the larger organizations. He was glad to hear from Miss Bunn that D.S.I.R. might be looking into this problem.

The speakers that afternoon were both concerned with the general theme of improving the service and its efficiency.

DISCUSSION

MR. J. R. STOCKS (The Shell Petroleum Co. Ltd.) thanked Dr. Fairbairn for his extremely entertaining paper. He had started by saying it was impossible, in his view, to plan something that could not be defined and that an information service could not be defined.

It was clear, however, that when later in his paper he talked of techniques and methods used in various types of information service many delegates both understood and appreciated his remarks. This showed that there were in fact many points of similarity in various types of information service and that the differences were not so great as was implied by his opening remarks.

Dr. Fairbairn also said senior staff of information services did not have to bother with the details of cataloguing and library techniques. But somebody had to bother about these things, and in most of the smaller services it was the senior man.

The CHAIRMAN asked how much of the available effort, which was nearly always too small, was to be devoted to routine tasks.

DR. FAIRBAIRN explained that he referred to techniques of all kinds, including office methods, of which there were a great number in a big organization. The persons at the top of a growing organization should not be concerned solely or mainly with day-to-day routine. They must somehow manage to detach themselves from it if the unit was to make progress. This might be difficult in a growing and hard-worked unit, but at some stage in the growth more and more of the routine must be delegated, whilst those at the top would become increasingly critical users and evaluators of their own services. Those at the top would still have the responsibility for the efficiency of the services but, if routine ran smoothly, as it should, only a relatively small amount of time need be spent on such supervision by senior persons.

MR. A. E. CORNFIELD (British Petroleum Co. Ltd.) insisted that there should be a periodical review to see whether any flaws had accumulated and suggested that it was necessary at frequent intervals to put oneself in the place of the customer so as to keep in touch with any variation in the mechanics.

DR. FAIRBAIRN, in agreeing, said there were a number of methods of reviewing the efficiency of the information unit. For example, by using one's own services. All kinds of defects might be thrown up and could be corrected. It was also part of the responsibility of the senior staff to arrange the adequate training of junior staff, without which many things could go wrong. But this was merely good administration and management common to all units and not peculiar to information units.

MISS BARBARA KYLE (Social Sciences Documentation) asked what evidence Dr. Fairbairn had that senior people in such units as he had depicted went on doing routine work when they had sufficient people beneath them to carry out such duties.

DR. FAIRBAIRN said that this was difficult to answer quantitatively. As an example he quoted that in his own department the selection of patent specifications, now some 25,000 a year, was formerly done by the head of the unit. In stages this job had now been passed to a non-graduate person without deterioration in selection. The non-graduate, of Advanced G.C.E. Chemistry level, had been trained to do the work, so taking over work considered formerly of graduate level and releasing graduate man-power for other work.

There must be many jobs now rated as jobs for graduate or senior staff that could be worked a long way down the chain, given adequate thought and training and sufficient breakdown of the job.

MISS M. GOSSET (United Kingdom Atomic Energy Authority) asked how Dr. Fairbairn managed to keep juniors long enough to train them.

DR. FAIRBAIRN said he did not keep juniors longer than anyone else: he was making six wedding presentations this year, and four were anticipated next year. If the jobs were sufficiently specialized and the right juniors were engaged, they would do the jobs adequately.

MR. P. F. COLE (The British Petroleum Co.) asked whether the easiest way to lose juniors was not to hold them off jobs they felt quite competent to do.

MR. J. FARRADANE (Tate & Lyle Research Laboratories) pointed out that a man who was in charge of a department of forty-five or more obviously had a different point of view from the man in charge of a smaller department. He wanted, however, to take up a contentious subject. Dr. Fairbairn had talked about the classification mystique and 'all this nonsense about electronics'. He rather suspected Dr. Fairbairn knew nothing about it, and it was foolish to run down something one knew nothing about, because one only betrayed the fact. There had been a good deal of misleading work in this direction and it had been something of a failure. Some of it had been more potent in American 'go-getting' methods than in actual results. Nevertheless, there was something in it.

People who were trying to advance on both the classification and machinery sides had realized that there was a very sensible problem. The literature was becoming so vast that some method of speeding up the work of searching it would have to be introduced sooner or later. A great deal of valuable work had already been done, but this was not the place to discuss it.

Dr. Fairbairn replied by saying that he was not qualified to talk about information methods in small or static units, and had assumed that he would not be expected to do so. His remarks about classification systems, electronic methods, etc., were directed against mis-use of these methods by over-enthusiasts, who tended to lose sight of the fact that use of such methods should be a means to an end and not an end in itself.

Of course new methods and techniques must be watched, and used where they offered real, and not apparent, advantages. In his own department many systems of filing, recording, indexing and classifying had been tried, and new developments were continually under observation for possible use. There was by some persons too much emphasis on the collection of more and more information and its subsequent treatment by more and more complex methods, yet it was of interest to note that in his own department over the past few years some 2–3 million items of information on index cards and in other forms had been discarded without any loss as far as could be judged. There was still approximately an equal number of index cards, etc., remaining which might also be subject to severe editing.

This and other reasons led him to believe that a major part of published and reported material, perhaps as much as 90 per cent., could be ignored for recording and indexing without significant loss. It was regrettable if all of this material had to go into a great rag-bag that became ever larger and larger, with ever larger and larger mechanical sorting and/or more complex classification systems. He would advise discarding most of the material right at the beginning. There should be more thought about proper selection and indexing rather than about ever more complicated systems which treated useful and useless information alike.

Mr. C. W. Cleverdon (College of Aeronautics) said he was sorry Dr. Fairbairn did not include in information work responsibility for publication within the organization. It seemed to him that librarians should take that step in the direction of control of publication.

Dr. Fairbairn replied that he was not suggesting that 90 per cent. should never be published, but it need not be further recorded and classified in detail. He would certainly favour some control over writing up information. In the larger information and intelligence units some control had, he thought, been exercised and it was a very sound idea.

Mr. Jack Bird (Aslib) referred to the idea that Aslib's function in the future should be to take the broadest possible view and bring in the broadest selection of people. Most of the staff of Aslib, he said, would agree with that. His only query was that in a long list of possible activities he had failed to spot any that were not already covered in some way.

Dr. Fairbairn agreed that all of these activities were probably covered. It was, however, necessary to publicize such activities, particularly to the users of information. There was a need to bring in more technologists, scientists and economists.

The Chairman asked, with regard to the suggestion that Aslib should undertake operational research into new projects, what Dr. Fairbairn had to say about university work. Did this country compare unfavourably with America? Was this a way in which D.S.I.R. might spend some of its money—sponsoring university work?

Dr. Fairbairn said as far as he knew there was not very much of this work at the universities in this country, whose main function was educational. There did not appear to be any research work such as was carried out in American universities. Collaboration between D.S.I.R., Aslib and the universities was highly desirable.

He presumed the D.S.I.R. unit to which Miss Bunn had referred in an earlier paper would be well in touch with Aslib.

The Chairman asked whether Miss Bunn had anything to say on this subject.

Miss R. M. Bunn (D.S.I.R. Lending Library Unit) said it was hoped to have a research unit in the library. It could play an important part in the promotion of literature and information.

They had no definite ideas about the research problem yet and were open to all suggestions. They would certainly take note of this one.

DR. FAIRBAIRN thought the answer was fairly simple. If D.S.I R. had the money and Aslib had some ideas, the two could be put together.

MR. J. G. HALL (Esso Research Ltd.) said he hoped something would be done by Aslib to persuade publishers of journals to maintain reasonable standards of publication. Practices were at present being initiated and continued which called for an authoritative statement, so to speak, to put them right.

DR. FAIRBAIRN replied that this was a very thorny problem. He did not think anyone could be stopped from publishing periodicals of any form or size they wished.

It was really a question of collaboration If Aslib or any other body set itself out to tell publishers what to do they would not get very far. With mutual co-operation something might be achieved. No doubt in many cases the publishers had their own sound reasons why apparently good suggestions could not be adopted.

MR. C. W. HANSON (British Scientific Instrument Research Association) said he would not not like it to go on record without a denial that Dr. Fairbairn thought it impossible to plan an information service. It was completely untrue. It was perfectly possible to plan an information service, and if it was not possible, then frankly what were they all doing? Were they just waiting for someone to push them this way or that?

There was already sufficient established knowledge to permit of the planning of a service or a series of services, the making of reasonably accurate estimates as to cost and the evaluation of the service to the people concerned. As time went on, apart from some vast organizational change, it might be found that there should be a move in one direction or another to get the best effect. But it was shocking that Dr. Fairbairn should have based his whole paper on a denial of the very basis of Aslib's existence.

When he joined his own association, Mr. Hanson said that he spent about three months in planning, and his very generous council told him he need not worry too much about finances, premises and so on. Ten or eleven years later he found that with small exceptions what he had planned had, broadly speaking, emerged.

He was really shocked at Dr. Fairbairn's devastating statement and he was still more shocked that no one else had denied it.

DR. FAIRBAIRN replied that he agreed that each individual information service could be planned to some extent. What he had denied, however, was the implication that information services could be planned to a common pattern, as were, for example, domestic buildings. What planning there was had to be directed to the particular circumstances under which the information unit worked and served. At any one time the information service must be adjusted to those set of circumstances and to those it served. Some planning there must be, such as the planning of a budget a year ahead.

He was delighted that one of his perhaps provocative points had been taken up and he hoped others would receive the same treatment.

MR. STOCKS asked whether Dr. Fairbairn had ever met an architect who was prepared to plan a building without knowing what it was to be used for.

MR. B. AGARD EVANS (Ministry of Works) said he was about to make precisely the same point. Surely no one would embark on anything of the kind without knowing the implications.

The CHAIRMAN asked whether Dr. Fairbairn would like to pursue the idea that nothing could be got out that was not put in. How did he decide what to put in and what questions would he rely upon in building up a gigantic index? Or would he instead rely upon ringing up Bloggins, because he would know the answer anyway?

DR. FAIRBAIRN said this was difficult to answer, as experience together with common sense were so important in this matter. In his own department many years ago reports were then indexed adequately, mainly under chemical products. The indexers could not anticipate certain aspects that were not then important but had since become important, but by a combination of memory, experience and working back on particular lines it had been possible to extract information not indexed on, for example, rate of reaction, plant constructional material, etc. In another twenty or thirty years' time there would no doubt be some new important aspects not recognized by the indexers, or even by the authors at present.

It was unfortunate that detailed indexing was often in a form that one could not browse through later. This was where electronic computers, mechanical punched-card sorting methods, etc., lost their value, although for statistical and other similar information they were very suitable. The structure of chemical formulæ, for example, could be well adapted to Hollerith-type punched cards, and information on a particular set of compounds could quickly be retrieved. Every problem had to be tackled in the way most suitable for putting in and getting out the information required. The problems were constantly changing.

MISS BARBARA KYLE (Social Sciences Documentation) said that if what Dr. Fairbairn had said was true, the Conference was wasting its time. Surely the ability to plan ahead in any scientific problem came from learning from the experience of others. If the only way to find out how to do something was by doing it, why were they gathered together to share their experience? Dr. Fairbairn had referred to an index prepared some years ago which did not provide what was wanted today. Surely his experience with that failure would help other people to plan for success.

MR. JACK BIRD (Aslib) said it was not true that one could only get out what one had put into an index. It was possible to use someone else's classification to get out something one would never have got out by oneself. This was very important to people working at Dr. Fairbairn's lower level in an information service.

DR. FAIRBAIRN said that he did not follow the argument that one could get out of an index what had not been put in. He did not think it possible for one person to anticipate all future requirements, and if these were not provided for in the first place he did not see how they could be retrieved later.

In answer to Miss Kyle he agreed that one could learn through trial and error. Such experience was a good way to learn. The other way to learn was to go out and see how other people did things. His theme was that the information service should be adaptable to suit the particular needs arising with the passage of time.

Some speakers had implied that he had said an information service could not be planned. This misinterpreted his theme that the planning could not be to a common pattern and, in fact, was almost a day-to-day process to meet changing circumstances.

MR. C. G. WOOD (Royal College of Science and Technology) asked whether Dr. Fairbairn would forget his inhibitions and give some of the criticisms he was storing up for the annual general meeting

The CHAIRMAN said that this was outside the terms of reference of the meeting.

MISS Z. M. OWENS (Imperial Chemical Industries Ltd., Billingham Division) said that she would like Dr. Fairbairn's opinion on a problem which she and no doubt other people had encountered.

An indexing system was chosen some years ago with a view to certain requirements. It provided an adequate service but in the course of ten years the range of interests and the volume of information had changed so that it was no longer entirely adequate. There were two possible courses—to modify the system and make a compromise, continuing to use it although one did not particularly like it, or to drop it and introduce a completely new system.

Which method would Dr. Fairbairn recommend?

DR. FAIRBAIRN said that it would depend on the circumstances, but personally he would start a new index because there was nothing like trying new methods.

MR. V. D. FREEDLAND (British Hat and Allied Feltmakers Research Association) said there seemed to be some confusion between planning and organic growth. While basic planning was essential, growth and development took place all the time. It was necessary to modify one's ideas according to changing requirements. Dr. Fairbairn was quite right to say that one could plan only as one went along. Organic growth might necessitate a division or change of direction, and it was often difficult to see very far ahead.

MR. C. W. HANSON (British Scientific Instrument Research Association) asked whether there were not a limited number of factors which determined each plan. He agreed that one must plan for something, but it was not too overwhelming. Approximately how many potential customers were there? What kind of people were they? Were they chemists, physicists, engineers? Could they read high-grade science or did they want it in workshop terms? Where were they? Were they scattered all over the country, all over the world, or in one's own building? Surely these were the factors on which to plan. There were not such a vast number.

Given the answers to these questions it was possible to prepare a ground plan that would have fairly general application. It was undoubtedly true that a large number of the information services represented at the conference had basically the same ground plan: it was not as specific as all that.

MR. J. FARRADANE (Tate & Lyle Research Laboratories) said he had not taken up the points raised by Mr. Hanson because Dr. Fairbairn's generalizations were too obviously wrong to bother with. He now saw it was necessary to take the matter further.

Engineers might want standards and other people patents or some other information. But it was all pieces of paper. The idea that the job was radically different was quite absurd. The techniques might be slightly different but there were general techniques that were familiar to everybody.

Dr. Campbell, of Aslib, had made an investigation which was not completed yet, but it showed that similar techniques were used in different departments, although there might be slight variations to meet local needs. This also applied to abstracting and indexing and liaison. He defied Dr. Fairbairn to produce anything in his department that was so radically different.

DR. FAIRBAIRN said he would agree with Mr. Hanson that in a somewhat static organization it might be possible to plan an information unit with comparatively few changes for many years. He supposed some of them never changed. Probably they never changed the aspidistras either! But he was talking about the growth of an information unit, not about static or decaying units. It was not only the customers who were of importance, and these changed enough both in training and outlook as time passed, but also the range of subjects covered. It was remarkable how the latter could change, almost as the result of an overnight occurrence. Some examples were quoted from his own experience.

In reply to Mr. Farradane, he suggested that it would be unlikely that any patent agent would agree that a patent specification was the same as a standards specification and should be handled in the same way. They were entirely different and had to be handled from quite different aspects, even though they might be regarded as pieces of information. As for new and different techniques, in his own department these were regarded more as handmaidens than as being worthy objects in their own rights.

The CHAIRMAN, in bringing the discussion to a close, said that, if he might return to his hobby-horse, it was clear how often people had to rely on their judgment in deciding what to do and how seldom quantitative information was available, or indeed qualitative information, about the work of information services and how information reached the customer.

Did most information come out of those magnificent indexes they all built at such enormous cost? Or did it come out of the memory of the staff? Or was it obtained by ringing up Bloggins because he was the man who knew?

Some effort really should be made to answer these questions: the answers were needed to aid planning, which seemed to be such a controversial matter. Experience was, indeed, necessary as well; and surely the value of the meeting must lie in the sharing of experience.

He felt sure everyone would wish him to thank Dr. Fairbairn for submitting himself to criticism.

THE USE OF INFORMATION IN IMPROVING OPERATIONS

BY B. H. P. RIVETT, M.SC.

Head of Field Investigation Group, National Coal Board

32nd Annual Conference, Scarborough, 21st May 1957

THE ultimate estimate of the value of any piece of information is measured by the change it creates. This paper considers the problem of utilizing information under three headings:

1. Determination of what is actually happening.
2. Communication channels in processing information.
3. Utilizing information in order to determine optimum action.

DETERMINATION OF WHAT IS HAPPENING

A criticism commonly made about the information spilled out by data-collecting organizations is that sometimes, when a check back is made on the operations which the information purports to describe, the relationship between what is going on and what is reported to be going on is largely illusory. There can be a large element of risk in taking for granted what is described as happening by an information service. This, after all, is not surprising, since the job of the processor of data is to distil and render the information in a concentrated, identifiable and consistent form. With the best will in the world the processor of information cannot exhibit truth if truth is not obtained in the basic data supplied to him from the lowest levels.

The following example shows this. The Road Research Laboratory of D.S.I.R. have an Operational Research Unit. Some time ago this unit was carrying out a study of the causes of collisions at night between vehicles. One aspect that struck them as being possibly important was the inadequacy of the rear lights displayed on vehicles. The statistical returns of the Ministry of Transport, however, showed quite definitely and quite conclusively that only on rare occasions could defective rear lights be blamed for accidents at night, and no matter how the statistics were analysed or what statistics were used the result was always the same. The unit, however, decided to analyse the data according to the age of the vehicles involved. (The age could be derived from the licence numbers of the vehicles.) This analysis showed that a significantly higher proportion of pre-war and immediately post-war vehicles were run into from behind than happened with more modern vehicles. In fact, the decrease in proportion of vehicles damaged from the rear fell off sharply for vehicles produced from 1947 onwards, which corresponded to the time when the export drive of cars to the United States started. To correspond with the American practice all these cars had large rear lights. The analysis therefore showed that cars with large rear lights were less susceptible to being hit from the rear than cars with small rear lights. The statistics themselves were compiled from police reports of accidents, and the team found that policemen are very loth to ascribe defective rear lights as a cause of an accident, especially as the lights themselves are probably damaged in the collision and consequently one cannot tell whether this was the cause. This is an interesting example which shows how necessary it is to have constant checks back to the basic source of the information. An account of this work is given in Road Research Technical Paper No. 25 *Rear lights of motor vehicles and pedal cycles* (H.M.S.O.).

Another and rather more trivial example of this occurs in the writer's own industry, the coal industry. One of the problems which the Coal Board's Operational Research Group has been tackling has been the problem of labour turnover. The national statistics were used in order to select collieries with high and low labour turnover indices at which we might study the factors influencing labour turnover. One of the pits we visited as having a very high labour turnover was a colliery at which a large-scale reconstruction was under way. Almost side by side would be work carried out underground for production and reconstruction. Now reconstruction is paid for under our capital authorization, while production is paid for by our revenue account. Quite often large numbers of men will switch from production to reconstruction at the same colliery, but each time this happens the man is taken off the colliery books and put on the special reconstruction books. This gave a very high labour turnover for the pit, whereas in fact the net labour turnover was quite small. According to the rules the truth has been said, but a misleading impression was given from the statistics.

An interesting paradox arose in studies of attendance and absenteeism. Twelve pits which had the highest absenteeism rate in the country were visited in order to try to find out what were the factors influencing absenteeism. What we found at these pits was that most of them had also the highest attendance rate. The reason was that the men who did attend worked a lot of extra shifts in order to make up for the work not done by the absentees. Consequently, you have a number of collieries which would come top of an attendance table as well as top of an absence table.

It is, of course, easy to show the drawbacks implicit in any set of information. The concern here, however, is the necessity for the supplier of information to carry out his own checks. This can only be done by him carrying out some small research investigations in which any misconceptions will be thrown up.

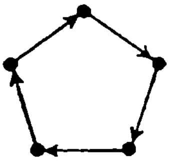
Quite often, however, although the information itself might be correct, it is very necessary to study the units of measurement used. In some cases by careless choice of a unit one may draw a different picture of what is going on. In other cases the choice of a unit of measurement forces apparent consistencies to emerge where such consistencies do not exist. In the example on labour turnover which was mentioned above a convenient index is the ratio of the total number of leavers in a year to the average number on the books throughout the year. At first sight this seems quite reasonable, but the index means that the same figure of labour turnover can describe two remarkably different situations. If, for instance, one hundred men of whom ten leave during the year are replaced, the index is 10 per cent. Alternatively if 99 of the 100 are stable and one man leaves and is replaced ten times the index is still 10 per cent. Most people, however, would feel that the second situation is a rather healthier one than the first.

To sum up this section, information services should constantly check on basic data all the way through from its source. There is also a need of constant checking of the units of measurement in order to be quite sure that they may not be begging important questions. The end product of any research information cannot be any better than the quality of the input of information.

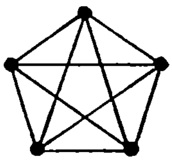
COMMUNICATION CHANNELS IN PROCESSING INFORMATION

We shall now consider the organization of groups of people who have specific tasks to accomplish. These groups may range from a small research team operating in a laboratory to a whole coal mine, or even to a whole industry. Each such organism will have as its input the physical raw materials which are necessary to its operation as well as information which will flow around some form of communication or management network. The basic problem of the communication of data, ideas and attitudes within an organization is one which in recent years has received much study. We shall consider only one aspect of this, and that is the relationship between efficiency and morale in small research teams and the communication pattern or pattern of authority which is adopted. The work has been carried out over a period of years at the Massachusetts Institute of Technology. The basic paper is by Bavelas in the *Journal of the Acoustical Society of America*, volume 22, 1950, pages 725–30. The most complete account of this is in *Operations research for management* by McCloskey & Coppinger. This volume also includes a complete bibliography on this subject.

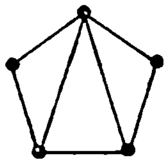
The basic experiments carried out at M.I.T. have been organized as follows. The group of students are given the information required to solve a particular problem. This information might, for example, be simply the pieces of a jig-saw puzzle. Channels of communication are prescribed and the group are then set to solve the problem. One may stipulate channels of communication at will, but twelve channels which were the subject of experiment are illustrated below:



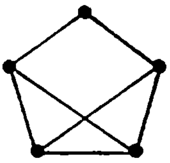
a. Circuit



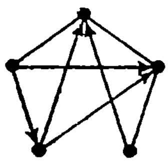
b. Completely connected



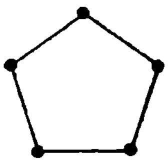
c. Diable



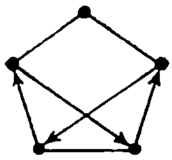
d. Governor



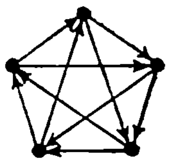
e. Double star



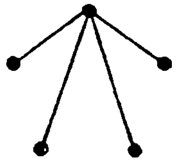
f. Circle



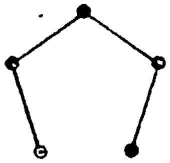
g. Quasi-circle



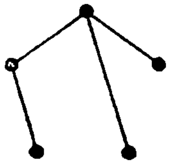
h. Pinwheel



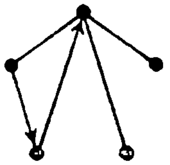
i. Star



j. Chain



k. Fork



l. Shake

The simplest experiments involved the solution of a problem, and the total number of acts of communication was recorded, together with the students' subsequent reactions, in order to get the morale effect. Other experiments were carried out in the presence of noise or other forms of distraction. Yet further experiments were carried out to show the efficiency of filtering information in communication channels.

The results which came out of this study have been quite interesting and form the basis of a great deal of further research. The most efficient way of setting up the communication network was the 'authoritarian'. The most inefficient was the completely 'democratic'. (These correspond to the 'star' and 'completely connected' networks respectively indicated above.) On the other hand, team morale seemed to be inversely proportional to efficiency. The students co-operating in the 'authoritarian' network did their work most quickly, but emerged the most miserable. This work, which is only briefly summarized here, should be studied by all information officers in the context of the work of their own organization. A further interesting point, however, which emerges is the manner in which the man at the centre of a communication channel, irrespective of his natural ability, tends to develop as a team leader. It is very interesting to note how one of the results of the M.I.T. work is confirmed exactly in practice in an extremely industrial setting in another country. The National Coal Board have recently been carrying out some studies of underground telephone systems. One of the incidental results was the fact that 80 per cent. of calls made over colliery telephone systems terminated or started with the switchboard operator. The operator emerged as a centre of information and also as an unofficial organizer of the colliery.

All this work being carried out on information handling within research units, or large organizations, is an aspect of the application of the science of cybernetics. This science is still very much in its infancy and is still rather more of a philosophy than a science. It is, however, destined to play a big part in management control in the future and, since the fundamental raw material in cybernetics is information, it should be a science with which the members of Aslib should be acquainted.

USE OF INFORMATION IN DETERMINING OPTIMUM CHOICE

So far we have considered the acquisition of information and its processing within a work unit. All this, however, is only a means to an end. We now mention the way in which scientists, working in the most unlikely fields when their particular speciality is considered, have been able to guide management in making the optimum choice.

It is still true to a large extent that management acts intuitively and on a basis of experience. With good managements this works very well, and with poor managements it may be disastrous. In recent years scientists have found it possible to quantify the results which might accrue from alternative decisions which management might take, and in this way indicate what is likely to be the best decision. These studies, which are now emerging as a science of their own, are loosely grouped under the heading of 'Operational Research'. The author's task is to apply operational research in the National Coal Board. In the remainder of this paper examples are given of how basic data have been processed by techniques of operational research to guide management in their choice in our industry.

Each year the coal mines of this country drive two hundred miles of tunnel. These tunnels are either at existing mines or at new sinkings, but in every case they are aimed at reaching new reserves of coal seams. It is obviously important both for the well-being of this country and for the economy of the coal industry that these new seams should be exploited as quickly as possible, and in doing this the speed at which we can tunnel is of fundamental importance. The problem with which management was faced, therefore, was 'What do we have to do to accelerate tunnelling?' The easiest thing in the world is to improve any existing operation, providing one is prepared to spend the time and the money. The intelligent thing to do is to get the maximum improvement for any given effort, and in order to do this one needs to relate quantitatively improvement and effort. Studies have been made of the tunnelling operations at large numbers of collieries in this country as well as some abroad. It has been found that tunnelling speed is determined by as many as twenty different factors. At first sight it is not obvious whether one should accelerate tunnelling by tackling all twenty factors, or whether it would be better to tackle a few and, if so, which few. An exhaustive analysis of the studies we have made of the tunnelling operation enabled one to express tunnelling speed as a function of the various factors in the following way

$$\text{SPEED} = Aa + Bb + Cc + Dd + \dots + Tt$$

where a, b, c, etc., are quantitative measures of the various factors and A, B, C, etc., are parameters which express the importance of these factors. This equation, or 'model' as it is called, showed in the event that only three of the twenty factors were important. One of these factors involved fundamental research and development on rock-drilling methods, another involved the correct selection of existing equipment for loading out the rock, while the third was a measure of the efficiency of the crew, and hence involved method study. The equation also indicated the way in which tunnelling would be accelerated with any given improvement in these three factors. Since it is possible to express the advantages accruing in money and production from any given increase in average tunnelling speed, this equation can now be used to estimate how much money it is worth while spending on these three projects. It is now possible, for example, to quantify the decision of management as a straight investment problem. This work has in fact been undertaken and we have achieved a doubling of tunnelling speed in some cases with the minimum of effort measured by money spent or people employed.

Another study which has been undertaken has been an investigation into the adequacy of underground telephone and communication systems for day-to-day control of colliery operations and also for the emergency evacuation of the pit. The function of any communication system is to convey information. Telephone systems at collieries are similar to the nervous system of the body, and control the operations of the colliery as well as convey information. They are essentially the channel along which authority flows. There are many different ways of laying out communication networks. This is generally done in order to minimize the capital cost (telephone cable is very expensive). Automatic dial telephone systems are not yet completely safe underground, and hence cannot be used. Studies have been made of the delays arising on telephone systems with various layouts, and of the difficulties of making effective communication. These studies, which were made by listening in to telephone calls over a period of weeks at a number of collieries, and by exhaustive analysis of the data collected, have led to designing the standard optimum layout of equipment and system for different methods of working the coal. A significant improvement in our communication and information flow system will result from these studies.

Experience in the coal industry and in industry generally has shown a tremendous field for these techniques of operational research. The Operational Research Group at the National Coal Board is, for instance, at present studying twelve major projects the successful completion of each of which can, and will, save the industry hundreds of thousands of pounds. The scope in other industries is no less. In agriculture, steel, light manufacturing, transport by land, sea and in the air, textiles, chemicals and so forth, operational research teams are in existence and are playing an increasing part in determining the productivity and profitability of their industries.

No team, however, is any better than the basic information on which it works, and this brings us back to the first point and so completes the paper. Management often has to drive in a fog, and the task of the information officer and scientist alike is to present management at every level with the truth and with relevant points of reference. It is their job to present management with just as much truth as is necessary for him to do the job. There is a very wide field of activity in determining in any organization how much information, and in what form, is necessary for the proper functioning of management at each level.

DISCUSSION

The CHAIRMAN (Mr. R. M. Fishenden) said he hoped the meeting had enjoyed Mr. Rivett's talk as much as he had. Operational research and information were allied fields and many lessons could undoubtedly be learned from the examples given Naturally, he himself was particularly pleased, as the theme supported what he had been trying to put over earlier: that in the most unlikely cases the exercise of judgment could be assisted by quantitative information if one knew how to get it.

The talk was more in the nature of a background talk than a prelude to a long discussion, but Mr. Rivett would try to answer any questions.

He had said that some estimate might be made of the value of information by whether it led to change. People often went to a lot of trouble to collect information to prove that no change was necessary. How did that fit into Mr. Rivett's scheme?

MR. RIVETT said that one evaluated what might happen if other things were done. This might be called the conservative principle, i.e. retaining things as they were. He was not saying that this was a measure of the value of communication but that *if* one could measure it it would be. One could try, for instance, to measure the value in money of the conference. Any conference was a great act of communication and its value could be measured by the change or lack of change resulting from it. This might well be impossible, but the extension of science had been through measurement, and successful measurement made possible things previously said to be impossible. Sometimes measurement was impracticable, sometimes, as in the case of the conveyor belt, it saved several thousand pounds a year.

The amount of truth contained in the information itself was not necessarily a measure of the value of the communication so much as the action to which it led. This was a severely pragmatist philosophy.

MISS D. E. COOPER (The Cementation Co. Ltd.), referring to the speaker's assumption that tunnelling figures would be unfamiliar to most of his audience, said that her firm were specialists in tunnelling and she spent a lot of her time on this subject! There could be no comparison between the figures of 400 feet quoted for the hydro-electric schemes and 100 feet in the mines because of the restrictions imposed by the Coal Mines Act.

MR. RIVETT agreed that the Coal Mines Act set a limit, and added that many hydro-electric tunnels were only 9 feet wide as compared with 12 or 15 feet in the mines.

MISS COOPER remarked that there were tunnels 40 or 50 feet high in hydro-electric schemes.

MR. RIVETT, continuing, said that in hydro-electric tunnels, which went through rock, there was no arch-supporting.' The average of 30 feet a week included a large number of production pits where tunnelling was purposely at a restricted rate because the debris could not be handled faster through the pit. More stone up the shaft meant less coal.

There was some danger of confusing sprint speed achieved in one or two weeks with the average tunnelling speed over three or six months. One colliery had a sprint speed of about 200 feet a week.

MR. A. E. CORNFIELD (British Petroleum Co. Ltd.) asked whether there was any optimum number of men who should be put into a team which could be used usefully in argument.

MR. RIVETT said that he did not know of any work under this heading. Some work had been done on comparable forms of information—the verbal message and the written message. In Army divisional exercises, for instance, the communication pattern had been studied. Large numbers of people learnt Morse, but less than 1 per cent. of useful messages came through by Morse. The most useful method was personal contact, which far outweighed in value any written act of communication. This was one reason for going to conference rather than reading—or not reading—the papers at home.

MR. A. H. HOLLOWAY (Ministry of Supply) asked if he might return to the private fight on tunnelling. He wondered whether the basis of the exercise should not be questioned. Surely it was open to question whether speed was a good thing in itself.

Secondly, it gave one a thrill to hear there were twenty-five criteria, but in his own small experience the difficulty arose that a formula might be purely empirical. The figure might turn out to be unrealistic. What checks could be applied to ascertain the suitability of the formula?

MR. RIVETT said with regard to speed that one consideration that emerged was the cost of tunnelling and whether it increased with speed. An optimum point had to be arrived at, taking into account, for instance, whether if the cost per yard varied greatly with speed it was more efficient to work at a particular speed.

He was a little puzzled by Mr. Holloway's empirical formula. He would have thought any formula was empirical, being derived from experience and observation. There was, of course, a check on the formula—to select the solution and apply it, and to check back whether the forecast had been correct. The formula could be accepted as long as the forecasts continued to be correct as a working hypothesis. If they were incorrect, one threw it out of the window and started again. This was the normal method of scientific research.

There were two ways of arriving at a formula, inductive and deductive. In one method one analysed the results against input, by statistical methods. The second was to write down what one thought must, by engineering considerations, be true. For instance, in studying a locomotive one knew that the energy consumed was related to the mechanical work done.

MR. M. WRIGHT (Royal Institute of British Architects) asked how the cost and efficiency of an information service could be measured.

MR. RIVETT replied that he did not know how absolute efficiency was measured, because it was so difficult to compare information services in different organizations doing different jobs. It could only be done on a relative basis.

Effectiveness could be measured in terms of the changes wrought by the information turned out. One might be turning out masses of truth of which no one took any notice. One might be extremely efficient but extremely ineffective. Until one could measure the effect of the change wrought by a piece of information one could never effectively determine the value of an information service.

They all felt the conference was a good thing or they would not be there. But they felt it intuitively and they could not measure it at present. He was sorry the answer was that he did not know.

MR. J. REVIE (United Kingdom Atomic Energy Authority, Dounreay) asked whether Mr. Rivett would give references to the suggestion that the rate went down when more people were added to the team. This had considerable bearing on the work of the information officer.

MR. RIVETT said that he would try to find the reference. That aspect was talked about in operational research.

A DELEGATE drew attention to Parkinson's Law.

MR. RIVETT said that that was the exact analogy, perhaps. He had never read Parkinson's original paper.

MISS A. J. SPENCER (Petrochemicals Ltd.) said that Parkinson's Law was referred to in *The Economist* for 19th November 1955.

MR. K. R. LENEL (International Combustion Ltd.) drew attention to Mr. Rivett's statement that the work of the information officer should consist in evaluating the information he received and passed on in order to give the scientist who was to receive it the utmost benefit from the message.

In his own opinion, that could apply only to a very narrow field, because the information officer in general had to cover a very wide field and could not be conversant with everything that went on in detail. On the other hand, he might get into difficulties if he allowed someone else to do it.

MR. RIVETT replied that he would not try to evolve a common pattern. He was merely throwing out ideas, but what applied in some circumstances would not apply in others.

The CHAIRMAN said that at this point they might very well wind up a most excellent session. He thanked Mr. Rivett for his interesting talk.

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All the above items may be borrowed from Aslib Library, except those marked with an asterisk. Most of these are available for consultation in the Library, apart from a few for which locations in other libraries can be given by the Librarian.

ASLIB INFORMATION

ASLIB CALENDAR

OCTOBER

WEDNESDAY 30th. Conference on Library Services in Technical Colleges.

NOVEMBER

WEDNESDAY 13th. Winter meeting. See paragraph below.

WEDNESDAY 27th. 2.30 p.m. Northern Branch meeting in Burnley.

SEPTEMBER 1958

FRIDAY 5th–MONDAY 8th. Annual Conference. See paragraph below.

Annual Conference 1958

Aslib's next Annual Conference is to be held at Nottingham University from 5th–8th September 1958. Members may wish to make a note of the dates.

The Council has recently given a good deal of thought to its policy in connection with annual conferences, particularly in the light of the view which is expressed from time to time that an annual conference serves little useful purpose in an organization like Aslib where the membership covers such a broad range of interests. The Council is, however, strongly of the opinion that the variety of interests represented in the membership is itself a cogent reason for retaining the annual conference as the one occasion in the year when the thread of interest common to all of them can be demonstrated. The Council also feels that most members find it more convenient to attend an annual conference held at a week-end and that, equally, the majority prefers an institutional rendezvous to a large hotel. The Council was, in its deliberations, aware that the rising cost of hotel accommodation added to the difficulties of many members. For these reasons it was decided to hold the next conference at a week-end and to select a university centre. Nottingham was chosen partly because of its popularity in 1953 and partly because it is centrally situated to most members and reasonably easy of access.

Winter Meeting

The next meeting will be held at 5.30 p.m. on Wednesday 13th November, when ICI Head Office, Millbank, has kindly agreed to allow fifty to sixty Aslib members to visit the Intelligence Department. Light refreshments will be available. Application to be included in this party should be made immediately to the Director, Aslib, 4 Palace Gate, London, W.8.

It is intended that most of the Winter Meetings this season shall take the form of similar visits to specialized libraries. In each case the host librarian will be asked to give an introductory talk.

Committee on Public Libraries in England and Wales

Mr. F. C. Francis, Keeper of Printed Books, British Museum, and President of Aslib, is a member of the committee recently set up by the Minister of

Education to consider the structure of the Public Library Service in England and Wales. Special libraries are further represented by the inclusion of Mr. T. I. Ellis, who serves in the name of the University College of Wales and the National Library of Wales. This is indeed welcome representation of special library interests on a committee which might not unreasonably have been thought to demand the services only of persons with wide experience of local government. The deliberations of the committee should be all the more valuable for this representation and, indeed, the wide range of interests selected for representation on the committee indicates a statesmanlike approach which it must be confessed the layman frequently does not associate with library matters.

F.I.D. Conference

The International Federation for Documentation, of which Aslib is the British member body, held its 23rd Conference in Paris 16th–21st September. Among those present were eleven representatives of the United Kingdom. It was reported at the meetings that the compilation of the *Manual of Document Reproduction and Selection* had been completed and that there only remained the task of translating certain parts of it into French. The text appears in English and French. Preliminary editions had also been produced, by offset, of all three volumes of *Index Bibliographicus*. These are classified lists of serials which contain abstracts and bibliographical entries and cover natural sciences and technology, social services and the humanities respectively. A list of about 500 national standards in the field of documentation had also been compiled and would be published during the coming year.

The membership of the F.I.D. has continued to expand during the last year or two and those present were pleased to hear that national membership was at present being sought by two further countries of considerable size and one small one.

Dr. S. R. Ranganathan's many friends will be pleased to know that he was elected into honorary membership of the Federation during the conference.

Indian Association of Special Libraries and Information Centres

This Association was founded in 1956 and works in close co-operation with the Indian Library Association. It publishes an excellent *Bulletin* which Aslib Library hopes to receive regularly. The articles contained in the first issue are mostly of a high standard, and include one on library and documentation work by Dr. Ranganathan. It is hoped to list selections from this publication in forthcoming issues of *Aslib Proceedings*, and to abstract them in *Journal of Documentation*. The address of the Association is: IASLIC, 9B Esplanade East, Calcutta 1, India, and the price of the *Bulletin* is 7*s*. 6*d*. per issue.

Special Libraries Association. Metals Division

The Metals Division of the Special Libraries Association will meet during the Second World Metallurgical Congress to be held in Chicago from 6th to 8th November. Speakers from England, France and Germany as well as from the United States and Canada will take part in the programme and visits have been arranged to the Armour Research Foundation Laboratories, the International Harvester's new research centre, and several other research organizations in the Chicago area.

New Pharmaceutical Bibliography

Eugene Garfield Associates have announced the publication of a new bibliography, *Current Contents of Pharmaceutical Publications*, in their Current Contents series. It will appear weekly and will contain copies of the title pages of nearly 250 periodicals in the field of pharmaceutics. Further information and specimen copies may be obtained from Eugene Garfield Associates, 3 Thomas Circle, Washington, D.C.

New Punched Card System

Punched cards of the 'Batten' or 'Peek-a-boo' type are now available commercially in this country. They are known as the 'Brisch-Vistem System' and the equipment is a combination of the Batten principle and the Vistem visible index. The cards are supplied with Vistem equipment which enables any one to be picked out quickly and allows additional information to be indexed by visible signals. Each card has spaces for 1,000 holes. The system is flexible and economical of space, since it requires fewer cards than any other. The Brisch Organization is available to design suitable classifications for special requirements. Further information can be obtained from Carter-Parratt Ltd., Iddesleigh House, Caxton Street, London, S.W.1, or Brisch (Indexing) Ltd., 26 Victoria Street, London, S.W.1.

MEMBERS' ADVERTISEMENTS

Situations vacant

Applications are invited for the post of LIBRARIAN and Assistant to the Information Officer with the British Hydromechanics Research Association. The work comprises searching, abstracting and classifying technical literature and some general Information work. Salary £550–£750 according to qualifications and experience. Successful applicant will be eligible to rent a modern flat in the New Town of Harlow. Applications giving full details should be sent to Director of Research, British Hydromechanics Research Association, Harlow, Essex.

ASSISTANT required, young man or woman, for small specialized medical library in London. Typing ability, bent towards biology and/or chemistry, and documentation. Study facilities for L.A. exams. Write, stating age, education, etc., to Box 11, Aslib, 4 Palace Gate, London, W.8.

INFORMATION OFFICER required for export marketing member of a light engineering company situated in the eastern suburbs of London. Technical and/or economic background are essential qualifications together with experience in analytical indexing and the collation of information (not publicity) This is an interesting vacancy and calls for a man capable of displaying drive and initiative. Progressive salary according to age and experience Please reply, in confidence, giving full details to Box 10, Aslib, 4 Palace Gate, London, W.8.

THE INFORMATION SECTION of the G.K.N. Group Research Laboratory requires an assistant to deal with abstracting, literature surveys and inquiries mainly concerned with steelmaking. Desirable qualifications include experience of steelworks practice or a metallurgical background, some knowledge of languages, preferably German and Russian, and experience of information and library work. Applications should be made in writing to: The Director of Research, G.K.N. Group Research Laboratory, Birmingham New Road, Lanesfield, Wolverhampton.

LIBRARY ASSISTANTS required by THE ATOMIC WEAPONS RESEARCH ESTABLISHMENT, ALDERMASTON, BERKSHIRE, in the grade of Assistant (Scientific), for general duties in the Technical Library. G.C.E.(O) in four subjects, including English Language and a Scientific subject or equivalent, is the minimum qualification. Library qualifications and previous experience in a Technical Library an advantage. Junior Staff are encouraged to study for the Library Association Examinations.

SALARY: £320 (at age 16) to £485 (at age 25 or over) to £670 p a (At present the rates for women over 18 are slightly lower) Contributory Superannuation Scheme.

POSTCARDS for application forms to the Senior Recruitment Officer at above address. Please quote ref. 1601/205.

MALE ASSISTANT aged 22–28 required in the Information Section of an industrial research department. Duties include abstracting, technical writing, preparation of bibliographies and answering technical inquiries. Applicants must be willing to take a keen interest in many branches of science and technology. Ability to write clearly and concisely is essential. Experience in technical information work or librarianship, a knowledge of chemistry and physics to advanced level standard are desirable. Reading knowledge of foreign languages is an advantage. Good opportunities for training in all aspects of information technique. Salary according to qualifications and experience. Apply in writing giving age and details of career to. Personnel Officer, The Metal Box Co. Ltd., Kendal Avenue, Westfields Road, Acton, W.3.

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Retocee photocopying installation. Surplus to requirements. Specimen of work produced sent on request. May be seen working by appointment. Offers to The Director, British Rubber Producers' Research Association, 56 Tewin Road, Welwyn Garden City

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THE DISSEMINATION OF THE KNOWLEDGE OF SOVIET SCIENTIFIC WORK IN WESTERN COUNTRIES *

BY DR. A. E. STUBBS, M.SC., F.R.I.C., F.T.I., F.S.D.C.

Liverpool, 15th April 1957

MY qualifications for writing this paper rest on experience gained in the course of part-time abstracting and translation of Soviet literature in the field of chemistry and allied subjects. I have become interested also in the publication of translations, and I recently spent a few days in the U.S.S.R. discussing problems met in the translation and publication of Soviet literature with various scientific and technical bodies.

Soviet scientific and technical literature is undoubtedly very important, and its importance is constantly increasing. In the pure sciences, such as chemistry and physics, the standard of work is at least as high as that found in Western countries. In the applied sciences, such as engineering and the technologies, the position varies greatly from one subject to another. For example, in one subject in which I, as a textile chemist, am particularly interested—the science and technology of the coloration and finishing of textiles—the U.S.S.R. is undoubtedly backward as compared with Western countries, but there is every sign that she will make rapid progress in the next few years and will eventually attain the standard existing here. In other fields, however, e.g. electronics and engineering, I have good reason to suppose that she is already on much the same level as the Western countries.

Soviet scientific literature is therefore of great importance to us. Nearly all Soviet scientific literature is written in Russian, which is now second only to English as a medium for the communication of the results of scientific research. Nearly all of the world scientific literature that is not in English or Russian is in German or French, and as many of our scientists have a reading knowledge of German and French, but not generally of Russian, it may be considered that, apart from Russian literature, most of the scientific material in our libraries is fairly readily accessible to them.

Soviet literature, therefore, presents a special problem, and it is important to ensure, first, that all relevant Soviet scientific and technical literature finds its way into our libraries and is freely available to all; second, that adequate abstracting services and other guides to the literature are available; and third, that services are provided which ensure that there is no language barrier between the scientist and the information he requires from the Russian literature.

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* Paper presented at a conference held by the Aslib Northern Branch in association with the Brown Library, Liverpool.

OBTAINING SOVIET LITERATURE

Librarians, information services, commercial translation organizations and others who require Soviet scientific literature must know something about the types of publication available, how to obtain information about current and forthcoming publications, and how to obtain the literature they require.

The types of publication available in the Soviet Union are, of course, substantially the same as those available here. Two forms of publication call for special mention.

First, there are many irregular serials. Judging from their titles one might often assume that these are periodicals. We have, for example, *Trudy Instituta fiziki* (Transactions of the Institute of Physics), but this is not a periodical in the usual sense, for it is published at irregular intervals; there is no guaranteed number of issues per year and there is no regular price. The number of such irregular serials appears to be greatly in excess of the number of periodicals; for example, according to a recent list, the Academy of Sciences Press issues fifty-eight periodicals and 240 irregular serials.

Second, there are unpriced publications which are issued free of charge to the Soviet institutes and individuals that may be expected to be interested in them. Such unpriced publications are often very important—reports of conferences, recommended industrial procedures, and so on. Unfortunately, they are rarely published in large editions and there are generally very few surplus copies for distribution outside the U.S.S.R.

A survey by the D.S.I.R. showed that less than one-half of existing Soviet scientific periodicals and other serials are received in this country and 20 per cent. of these are not generally available on loan. This survey does not differentiate between periodicals and irregular serials, but periodicals probably predominate. It may be assumed that very few unpriced Soviet publications are at present received in this country. If we now consider all Soviet scientific literature, including books, then the D.S.I.R. estimates that in 1954 the total number of titles of new books and existing periodicals and serials was 18,000, of which only 2,000 have been received in this country. It will be seen that the present position of the availability of Soviet literature is far from satisfactory.

It is necessary to know how to obtain regular information about new and forthcoming publications. One important source is the weekly publication *Novye knigi*. Like all periodicals, this is easily obtained by subscription through an agent of Mezhdunarodnaya kniga, the Soviet organization dealing with the sale of Soviet publications outside the Soviet Union; there are three such agents in this country. *Novye knigi* lists the new books published in a given week, all classified according to subject. In addition, there are several articles in each issue, one of which is always devoted to short descriptions of the contents of the more important recent books. Other articles are allotted, more or less in turn, to the various publishing houses, of which there are many in the Soviet Union. These describe the future programmes of the publishers and discuss the significance of specific publications. New periodicals are listed and their scope is described.

Many publishing houses issue their proposed annual publication programmes in the form of unpriced booklets which can sometimes be obtained from the publishers, e.g. in conjunction with the operation of an exchange scheme. Information can be gleaned also from various scientific and technical journals in which the publishers make their announcements about their current and forthcoming publications; there will also be references in the text to new standards, reports of conferences, and so on. Examination of such sources would generally be very difficult for a library organization, but it is quite feasible to carry it out in commercial translation organizations in which the whole of the journals have to be examined in the ordinary course of translation from cover to cover.

When it has been decided what literature is required it is necessary to set about getting it. For most priced publications this would appear to be a fairly easy task, it being merely necessary to order them through an agent of Mezhdunarodnaya kniga. This method is quite satisfactory for periodicals obtained by subscription but it does not work altogether smoothly for other publications, although I may mention that the Director of Mezhdunarodnaya kniga, whom I met recently in Moscow, claimed that any literature that can be bought in the Soviet Union can be bought also in Britain; he appeared to be anxious to sell us as many Soviet publications as possible. In actual practice, however, unless an order is placed as soon as possible after the first announcement of publication, the book required may not be obtained. It is the practice to issue books in very small editions which are very quickly sold out; moreover, the machinery of placing orders and obtaining supplies appears to work rather slowly and the delivery time is often several months. Until this year irregular serials could rarely be obtained through the agents of Mezhdunarodnaya kniga, but this situation no longer obtains and Collet's has just issued a catalogue which consists largely of currently available publications of this sort. However, it still does not appear to be possible to place a standing order for a given irregular serial.

Soviet literature may be obtained also by exchange and sometimes this is the only practical method. There is a great enthusiasm for exchange in the Soviet Union: the scientific organizations seem to prefer to obtain foreign publications by sending their own in exchange rather than by purchase. For example, the chairman of the Committee of Inventions and Discoveries complained to me that he was forced to ask his government for currency for the purchase of British and American patents because the British and American Patent Offices would not agree to what he regarded as a fair exchange of documents.

Shortly after the war Soviet organizations began to approach various British organizations with exchange proposals and many of our scientific and technical organizations now participate in such schemes. Unesco has joined in the organization of the international exchange of publications, for it is a very desirable form of cultural contact between nations. The Unesco *Handbook of* *the international exchange of publications* lists various Soviet organizations with details of the publications that they are willing to provide on an exchange basis and up-to-date lists can be obtained by direct application to these organizations.

Books and irregular serials can often be obtained more expeditiously by exchange and it is sometimes possible to obtain out-of-print and unpriced publications—in particular, summaries and preprints of papers read at recent conferences. It is to be noted that many of the Soviet organizations which participate in exchanges can supply only the publications that they themselves publish.

I have still to consider standards and patents. References to publications of this sort are constantly occurring and readers are generally at a loss to know how to obtain them. It is unfortunate that translators often do not indicate when reference letters and numbers, e.g. GOST 5432, associated in a text with e.g. an instrument, engineering part or testing procedure, refer to a standard specification so that the reader may be aware that a document exists which will supply him with further information. Copies of Soviet standards can generally be borrowed from the British Standards Institution in London, for the U.S.S.R. is a member of ISO, the International Organization for Standardization, and in conformity with international agreement the Soviet Committee of Standards sends three copies of all their standards to each of the other member countries.

Patents, on the other hand, are very difficult to obtain, for no exchange arrangements appear to have existed until recently. Negotiations between the Soviet Patent Authorities and the British and American Patent Offices carried out a few years ago appear to have broken down owing to a disagreement on the terms of exchange. However, Soviet patents are now being obtained in America, for they are currently being abstracted by *Chemical Abstracts*. Mr. Garmashev, chairman of the Soviet Committee of Inventions and Discoveries, told me that they publish about 2,000,000 documents a year. Of these only 22,000 are author's certificates or patents; the difference between these two kinds of documents is mainly a legal one, and for our purpose we shall classify them together as patents. The remaining documents are 'technical improvements' and 'rationalization proposals', and Mr. Garmashev estimated that about 75,000 of these would attain the status of patent in America or Britain. In his estimation, therefore, about 100,000 of their annual output of documents would be eligible for the status of patent in Britain or America, which is to be compared with our 30,000–50,000. They consider that less than one-third of our patents would qualify for a Soviet patent: many of our patents are concerned with modifications of standard practice and the claims made in some of them are not borne out by practical tests, as many of our technologists know from bitter experience. Mr. Garmashev stated that no Soviet patent is granted without substantial evidence of the soundness of its claims and of the potential value of the invention in industry. He said also that no patent would be granted for a mere modification, but I feel that it must be very difficult to know where to draw the line—the Soviet authorities have, in fact, not yet come to a firm conclusion with regard to the best legal definition of the term 'invention', and much discussion is now going on on this subject.

It will be seen that, apart from patents, most Soviet publications can now be obtained either by purchase or by exchange. It is certainly desirable that all published original work should reach the Western world, and it is very gratifying to know that this matter is now being tackled by the D.S.I.R., which is making efforts to obtain every publication of interest to science and technology.

ABSTRACTING SERVICES

Even when all important Soviet literature is available in our libraries it will certainly remain largely unread unless adequate abstracting services and other guides to the literature are available.

The provision of abstracts in no way makes reference to the original literature unnecessary; in fact, the primary purpose of an abstract is to lead the worker to the right original literature. It is true that in some subjects, e.g. preparative chemistry, the abstracts are often so full that workers can repeat the experiments or get all the information they require without reference to the original paper, and it is of course very desirable that abstracting organizations, in considering the amount of detail to be given in their abstracts, should make this depend very much on the accessibility of the original literature and the extent to which the original language is known by those who will read the abstracts. However, for most papers, the abstracts cannot be more than indicative of the contents of the paper and its sole purpose is that of directing the reader to the relevant original literature.

The adequacy of available abstracting services appears to vary greatly from one subject to another. Adequate abstracting services are very costly and not all fields of work are associated with organizations that can bear this cost. Our abstracting of Soviet publications is particularly inadequate, as was revealed very clearly when the Soviet Union recently began to issue its new, extremely comprehensive abstracts of world scientific and technical literature. We have nothing comparable with this abstracting service in the Western world.* A survey by the D.S.I.R. indicates that only about one-third of the publications abstracted in the Soviet abstract journals are available in libraries in Britain and, in general, these are very inadequately abstracted in the English language. Even in chemistry, in which we have the excellent *Chemical Abstracts* of the American Chemical Society, the position is not satisfactory. The gaps can be filled to some extent by translations from the Soviet abstract journals but it is always better to abstract the original.

It is therefore an urgent matter to expand and supplement the existing abstracting services; generally speaking, this is true not only for Russian literature but for *all* scientific and technical literature.

The abstracting of pure science is, on the whole, well done; it is largely a matter of a quantitative increase. Technical abstracting, on the other hand, is often poor in quality. Much of it is done by library personnel who have a very scant technical background, whereas the first essential of a technical abstractor is a thorough practical knowledge of his industry: either he must be a former technologist or he must be a technologist who does the work in his spare time. Many of our generally available abstracts are indeed provided by people in this last category working on a semi-voluntary basis, none of our scientific and technical societies being able to afford to pay the rate for the job. It is my opinion that the abstracting of technical and scientific literature is of such great importance that it should be organized on a national scale; technical abstracting should be done mainly by suitably qualified technologists, and in order to obtain the best results part-time abstractors should be recompensed for their work at a rate comparable with that obtained, for example, by teaching at evening classes.

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* D. Yu. Panov. Institute of Scientific Information of the Academy of Sciences of the U.S.S.R., *Journal of Documentation*, vol. 12, no. 2, June 1956, pp. 94–100.

THE LANGUAGE BARRIER

If a list of translated titles, an abstract or a reference leads a scientist to a Russian paper, he may require a translation. It may be immediately suggested that it would be a good thing if a high proportion of our scientists learnt Russian. I am of the opinion that Russian should be taught very much more extensively in our schools. It is not a particularly difficult language and, as it resembles Latin and Greek in its extensive systems of declensions and conjugations, it provides a scholastic exercise similar to that provided by the classical languages; moreover, it has a wonderful literature and is a modern spoken language of great utility. However, not many of our scientists learn Russian and translations are frequently required.

Some Soviet periodicals are published in cover-to-cover translation. Consultants Bureau Inc., of New York, the pioneers in this sort of work, are currently publishing twenty to thirty journals in this way, and a few are now issued by other publishers, e.g. the Pergamon Press. However, very few of these translations are held by our provincial scientific and technical libraries—partly, no doubt, because the subscription rates are generally high. The costs of translation and of the processes required in the production of the master copy are very great and must be borne at present by a few hundred lithograph copies: subscription rates, in fact, could be much lower if a substantial increase could be brought about in the number of subscribers. I hope that libraries will see their way to purchase more of these translations so that cover-to-cover translation may become a more economic venture than it is today. However, some of the physical, biological and medical journals are not unduly expensive, their publication being subsidized by various national science foundations which can obtain government grants for such work. It is to be hoped that this beneficent work by public bodies will be extended further in the future.

I feel that, in the case of the more important scientific and technical journals, the answer to the translation problem is commercial cover-to-cover translation. In other cases, in which cover-to-cover translation would definitely be uneconomic, it is important that an adequate, inexpensive, rapid translation service should be available.

At the present time the scientist can turn to Aslib, the D.S.I.R. or the South Kensington Science Museum Library, who will tell him if any translation is available. If no translation exists and the paper is of sufficient importance, which generally means that another, independent request has been received, the D.S.I.R. will provide a translation; otherwise, Aslib should be able to introduce the scientist to a suitable translator. Special translations are costly and are not always encouraged by university and other authorities. A scientist, faced perhaps with a long paper, some small part of which might be useful to him, is often tempted to ignore the work rather than pay for a full translation. In many such cases all that the scientist really requires is a short verbal consultation with a translator. Such a procedure, in fact, may often be the best approach, and when the scientist can make personal contact with the translator he should do so: he may be able to save much time and unnecessary work.

Of necessity, much of my discussion on abstracting and translating applies in some measure to literature in all foreign languages and not only Russian. This is true with regard to the provision of accurate specialist dictionaries, both interlingual dictionaries and unilingual explanatory dictionaries. Translators cannot be specialists in everything they are asked to translate, particularly when they have to deal with industrial processes, and it is clear that, apart from a basic knowledge of the industry and of the Russian language, the translator from technical Russian should have at his disposal a Russian–English dictionary specializing in his particular subject and good English and Russian explanatory technical dictionaries. Very little such literature exists and much of it is of very poor quality.

In this field the work of Unesco is very commendable and its co-operation with compilers of dictionaries should eventually result in a great improvement in the situation. It is evident that compilers of dictionaries must be imbued with a spirit of inquiry, must bring in as much specialist assistance as possible, and must treat all previous dictionaries with great scepticism. Too much uncritical copying is done, incorrect definitions are constantly being carried forward from one dictionary to another, obsolete terms persist, and new terms fail to find their place. Many of our unsatisfactory and even incomprehensible abstracts would undoubtedly have been greatly improved if the abstractors had had satisfactory technical dictionaries at their disposal and many of our translations would undoubtedly have been made more enlightening.

FUTURE PROSPECTS

This concludes my review of the present position of the dissemination of the knowledge of Soviet scientific and technical work among English-speaking scientists and technologists. As regards the future, it is to be hoped that our abstracting and translating services will improve and will keep pace with the ever-increasing volume of material. It must be remembered that the language problem will not remain static. For example, in a few decades Chinese may become one of the major languages of science. Moreover, the time may come when a single language will be adopted for science in all countries; it is even possible that the language adopted will be Chinese, for the industrialized China of the future will contain a large proportion of the world's scientists and technologists, and I am told that the Chinese language, with its absence of morphology and its simplicity of sentence construction, can be satisfactorily employed as an international medium.

It will be a long time, however, before we can do without translators—in particular, translators from Russian. It is to be expected, in fact, that the demands on our translators will increase enormously, and the time may come when the amount of specialized human effort required cannot readily be spared. This, among other considerations, suggests that, in spite of high capital and running costs, the development of translation machines may be of great importance for the future. Until recently I was extremely dubious about the possibilities of machine translation, but since I have seen some of the published results of the Soviet and British projects I feel that the possibilities are indeed great.* Much work remains to be done, however, and it may be several decades before it is practicable to translate scientific papers by machine.

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* D. Yu. Panov· Avtomatichesky perevod (Automatic translation), U.S.S.R. Academy of Sciences Press, 1956.

A. D. Booth: 'Mechanical translations'. *Aslib Proceedings*, vol. 9, no. 6, June 1957, pp. 177–81.

USING FOREIGN LITERATURE IN AN INFORMATION SERVICE *

BY F. CROSDALE, F.I.L., F.R.S.A.

Information Officer, Simon-Carves, Ltd.

Liverpool, 15th April 1957

INTRODUCTION

THIS paper does not pretend to introduce anything which has not been said at greater length before, but it may prove useful to the extent that it attempts to collect together associated aspects of the utilization of foreign literature.

The writer is engaged in an information service of medium size and aspects of the service discussed here will relate solely to operations in such an organization.

It is unnecessary in a meeting of this nature to dwell on the ever-increasing volume of technical and scientific literature being produced both in this country and abroad. We are all acquainted with the welter of 'blurbs' which arrive almost daily announcing some new journal. One really wonders how many would survive their first issue if librarians in industrial libraries were to cry 'Stop, enough', when a new journal appears which seems to duplicate existing ones. But we are all so eager not to miss anything that may be of any value at all that we hardly dare to say 'No'.

The problems would be large enough if all the literature were in English, but alas, this is not the case. More and more journals have to be imported from the Continent, and particularly the U.S.S.R. It is proposed to deal briefly with the following aspects of the utilization of foreign literature:

1. Selection of journals;
2. Abstracts and abstracting;
3. Translation, and
4. Literature searching,

and to indicate the ways in which these are related to each other.

SELECTION OF FOREIGN PERIODICALS

The selection of foreign language journals which will yield the maximum of useful material presents something of a problem for firms having spheres of interest which are not clearly defined. The major journals may be found by reference to booksellers' catalogues, such as Collet's *List of Russian periodicals.* It has been found, however, that an analysis of items included in published abstracts is a sure way to discover which journals produce the largest number of entries of direct interest. A check on the number of abstracts considered worthy of local reproduction is of great assistance in deciding which journals to try.

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* Paper presented at a conference held by the Aslib Northern Branch in association with the Brown Library, Liverpool.

The number of abstracts taken from journals already being received in the library can also be used as a yardstick of the usefulness of such periodicals, since it will immediately show which are no longer producing useful material. This is of particular value in the case of foreign journals, as these have very little 'browsing' value for most of the scientific staff—not even advertisements for 'situations vacant'.

ABSTRACTS AND ABSTRACTING

Although we are concerned today mainly with language problems it seems logical to consider abstracting before translation, since it is mainly from this source that the demand for translation comes. The writer finds that most scientific staff are either unable or unwilling to attempt to read papers in the original language. Hence the particular need for abstracts from foreign language literature.

There are today many excellent abstracting journals which are of tremendous value in making known the contents of foreign literature. The field covered by such journals as *Chemical Abstracts* is, however, so wide as to make it necessary for the information section to peruse them, abstracting only those which appear to be of some direct interest to the organization served. By perusal of such journals it is possible to extend the coverage offered to a large amount of foreign periodicals, without having recourse to translation. Foreign language abstracts are also available but these, too, must be locally abstracted in translation to ensure that maximum value is derived by scientific staff. This again requires the services of a translator and can be a very time-consuming and expensive business which it may not be easy to justify.

The abstractor employed in an undertaking having very diverse interests cannot attempt to have specialized knowledge in all the fields which he must cover. He can, at best, have general background knowledge, and the writer feels that this is best gained by 'on the job' training. In his experience, some four to five years is required to obtain a really intimate knowledge of his employers' interests in all their ramifications to enable him to represent them fully in his abstracts.

Having acquired some general idea of the subjects of interest, the abstractor can start work. It is now up to him to reveal to his scientific colleagues the contents of foreign language periodicals and to select those items of particular interest.

Some foreign journals, notably German, are now providing English abstracts. These, however, are frequently so badly translated that the abstractor must refer to the original paper or an abstract in the original language before he is able to produce an intelligible version. The writer once complained to a German publishing house about the quality of the translated abstract offered, and for his sins is still producing the translations for this journal. At least now, when the journal appears, the abstracts are immediately usable. If all such abstracts were translated by workers in the field their utility would be greatly enhanced.

In the abstracting of foreign literature, where no abstract is provided either in the original language or in English, the abstractor must carefully scan the contents of the paper and attempt to select the salient features for inclusion in his abstracts.

A number of foreign journals, such as *Glueckauf*, include an abstracts section. Where these are to be translated a special burden falls on the abstractor, for he is now faced with the translation of very brief indicative sentences without the opportunity to consult the original work to discover the context. This can be a very hazardous business from the translator's point of view, and extreme caution must be exercised in using the imagination to fill in the unwritten words.

TRANSLATION

Having provided the scientist with an abstract indicating the contents of a paper one does not have long to wait (if the selection of material has been well done) before requests for translations begin to arrive. This is not, however, the only stimulant to the demand for translations, since, for example, foreign papers are frequently quoted in lists of references in papers by English authors.

In the organization with which the writer is associated translations are not normally undertaken merely on the strength of the fact that the subject is known to fall within the sphere of interest. This could lead to a great deal of wasted effort, since it is impossible for the abstractor to know exactly the state of development of a particular plant or process. Only when the abstract produces the demand is the translation undertaken.

Although the writer is employed in an information service which covers both development and research, translations are undertaken only for the Research Staff. Those for Development and Commercial Staff are done by their own translators. Consequently, the great majority of translations requested are of a purely scientific nature. A small number deal with practical applications of plant on which research is being undertaken. The number of patents translated for Research Staff is quite negligible. On the other hand, where Development Staff are being catered for, the demand is much more for articles giving 'know-how' and describing plant operation techniques. Patents are of great significance, and the translators are constantly receiving requests for the urgent translation of patents where it is felt that action may have to be taken quickly to prevent an infringement of the company's rights. The translation of patents calls for extreme care, since errors or omissions might prove disastrous.

No restriction is placed on requests for translation and in the writer's office not even a formal request for the work is required. When a member of the Research Staff decides that he requires a translation he simply brings the paper along to the Information Section and the work is commenced as soon as practicable. It is interesting to note that at present demands for translations are increasing at a steady rate of some 50 per cent. per annum, and this is considered to be a good sign as far as the abstracting service is concerned.

In view of the high cost of translation work it is essential to avoid useless duplication and time wasting resulting from other causes. The use of translation indexes will be referred to later.

The writer has found it convenient to employ two distinct methods of translation to meet different circumstances:

1. Oral translation.
2. Written translation further subdivided as follows:
    a. direct dictation
    b. direct typing by the translator
    c. manuscript.

Oral Translation

This method is limited in application but has a definite place in information work. Where suitable, oral translation is by far the most economic method, since communication is direct between translator and scientific user. There are two major disadvantages of this method, however: (*i*) that both parties must be available simultaneously and (*ii*) there is no permanent record, and if another worker requires the same paper at a later date it may be necessary to repeat the translation. However, it is a method well suited to short translations, e.g. summaries of papers to indicate contents where an abstract has not been seen. This method of translation makes very heavy demands on the translator, since he must comprehend the subject matter quickly and also be fluent in the language concerned. However, the translator has one great advantage in these circumstances in that he has the specialist on the spot and they can confer to ascertain the significance of some special term.

Written translation: (a) Direct dictation

By using the method of direct dictation, either to a typist or a Dictaphone, it is possible to achieve very high rates of translation. The machine method of translation recording has been found to be superior to all others, since it is instantly available when the linguist is free and does not object to the translator taking time off to consider a difficult passage. The machine can also be called upon to replay at any time convenient to the typist. Again, this method demands a fluent knowledge of the language if full benefit is to be obtained from the machine. The method has been found to be of particular advantage in the case of very long papers, since all drudgery is removed and, when working from photocopies, eye-strain is reduced as the eye does not have to leave the copy whilst dictating.

(b) Direct typing by the translator

Where neither oral nor machine dictation can be used direct typing by the translator is a time-saving arrangement so long as the translator is also a reasonably good typist. It is much less tedious than manuscript and is easier on the typist who has to produce the final fair copy.

(c) Manuscript

The writer considers the preparation of a manuscript draft to be a very time-wasting method of making a translation and feels that it should be used only in cases where the translator is not expert in the languages concerned, (and this can frequently occur where one translator must cope with most of the translation demand), or the paper presents some special technical difficulty.

SOME AIDS IN THE TRANSLATION FIELD

As has already been mentioned, translation is a very costly undertaking and, if it is possible to avoid making a translation, this should be done to enable the translator's efforts to be directed to more vital work. To this end efforts are being made by several bodies, notably Aslib, D.S.I.R. and the Science Library, to make more widely available the large numbers of unpublished translations lying in the archives of industrial undertakings. In the organization with which the writer is associated all possible steps are taken to find out whether a translation already exists before a translation is put in hand. Even though the number of successful applications is at present relatively small, this is considered to justify the work involved. A reply can be obtained from Aslib almost by return of post, so that little delay is incurred, and translations are not generally so urgently required that this small time-lag is not acceptable. It is felt that the greater co-operation of more organizations would quickly result in a considerable increase in the number of successful applications. For firms with small or no translation staff the co-operative scheme devised by D.S.I.R. for Russian translations is of special value. The system enables two or more people requiring the same paper to obtain a translation, made by a translator intimately acquainted with the subject matter, at a cost far below that which they would have to pay individually. It is a pity that similar schemes cannot be worked out for languages other than Russian.

Also, Aslib and D.S.I.R. maintain lists of translators with their language and subject specializations. From the writer's experience this service puts one in touch with an expert translator with a minimum of delay. The Translators' Guild of the Institute of Linguists is also able to help in this direction.

The *Translated contents list of Russian periodicals* issued by D.S.I.R. is also found to save considerable time and to make the contents of many periodicals available very quickly, frequently preceding published abstracts by many months.

The problem of the supply of technical foreign dictionaries has been the subject of much work by Dr. Holmstrom, and his bibliographies are of great value in locating existing works. The Russians are now producing a considerable number of specialist technical dictionaries which are generally of quite a high standard and are extremely cheap.

It is a great pity that there is at present very little in the way of organization for making available locally collected vocabularies in specific technical fields but, here again, Aslib is doing good work through its special Groups. Some booksellers, notably Bailey Bros. & Swinfen, and Collet's, issue lists which include selections of dictionaries, both technical and general. In this connection it should be pointed out that large general dictionaries are frequently quite as useful as some of the so-called technical dictionaries and contain an astonishingly high proportion of technical terms. The German Muret-Sanders is a good example of such a dictionary.

It is also very useful to buy technical encyclopædias published in a single language. The Russians are very good on these, and again the price is very low. Such works are frequently well illustrated and this is often of great value, since the translator can then consult with the specialist to ascertain the accepted name of a certain piece of apparatus or machinery.

LITERATURE SEARCHING

The writer hesitates to include this subject at all, since it is one which does not lend itself to generalizations; each search is unique and the method adopted depends on a number of factors such as urgency, aids available, date of material required, and so on.

In searching foreign literature without direct access to the material to be searched the writer finds that, in general, within the subject fields with which he is concerned, abstracts published in English are very often quite adequate. After all, the scope offered by *Chemical Abstracts, Fuel Abstracts, Ceramic Abstracts*, *The Engineering Index* and similar works is very wide.

The question of searching in foreign languages is rendered difficult by the fact that it is not easy to know exactly the indexing terms to be consulted in the other language. If the actual journals covering the subject matter of the search are available the indexes to these are usually fairly straightforward but consultation of foreign abstracts such as *Chemisches Zentralblatt* and *Referatnyi Zhurnal* is considerably more difficult and requires extensive knowledge of the language if the search is to be made in a reasonable length of time. Considerable time can often be saved by consulting a member of the staff who is a national of the country concerned, if one is available. The writer has found it useful to note any key indexing terms in his field under which items have been noticed when browsing. The utility of browsing in foreign literature of a technical nature cannot be over-emphasized from the translator's point of view.

It should always be borne in mind, when searching the literature, that published abstracts take a long time to appear and, for this reason, it is necessary to rely upon the indexes to periodicals if a search is to include the most recent information available.

CONCLUSION

Having heard the contents of this short paper you will no doubt agree with the note sounded in the opening paragraph in connection with originality. However, it is hoped that a purpose has been served by showing some of the means employed in the writer's organization in an effort to ensure that the most useful foreign material is obtained for the library and, having acquired foreign language material, that everything possible is done to make its contents available to research staff as early as possible after receipt.

Letters to the Editor

Referring to the article on the Delta card by Th. P. Loosjes (*Aslib Proceedings*, vol. 9, no. 5, May 1957, pp. 142–3), Monsieur Cordonnier has submitted the following remarks:

'Mes fiches Selecto sont de divers types de capacité respectives: 2,000–8,000–12,500–14,000 en carteline 150 × 210 mm, ou 20,000 sur fiches en plastique "invar" 150 × 210 mm.

'Elles existent aussi en fiches de capacité 5,000 sur format "statistique" 82 × 187 mm.

'Mes fiches 5,000, qui existent depuis un an, sont du type "Lozenge pattern" revendiqué par le Dr. Loosjes comme une nouveauté. Le centrage sur les sommets est automatique, sans avoir à les viser. Seules les lignes des centaines paires sont imprimées, afin d'alléger le graphique. Les fiches sont reversibles, et la lecture en est aisée, avec les lignes "5" et "10" specialement rénforcées.

'Mes fiches 20,000 en plastique sont d'une structure analogue.

'Je pense qu'il serait utile de faire connaître ces remarques dans un prochain numéro de votre revue.'

G. Cordonnier.

26 Avenue Kléber
Paris, 16.

SELECTIONS FROM THE RECENT LITERATURE

Books and Pamphlets

ASHEIM, Lester, *and others*
The humanities and the library: problems in the interpretation, evaluation and use of library materials. Chicago, American Library Association, 1957. xix, 278 pp. $5.

ASSOCIATION FRANÇAISE POUR L'ACCROISSEMENT DE LA PRODUCTIVITÉ
L'information dans l'entreprise moderne. Paris, Société Auxiliaire pour la Diffusion des Éditions de Productivité, 1955[?]. viii, 120 pp. plates. diagrs.

BATTELLE MEMORIAL INSTITUTE
Semiconductor abstracts. abstracts of literature on semiconducting and luminescent materials and their applications. Vol. III—1955 issue; E. Paskell, ed. New York, Wiley; London, Chapman & Hall, 1957. viii, 322 pp. 80*s*.

BRISTOL AND BATH PRODUCTIVITY ASSOCIATION. Office Methods Working Party
Office productivity—the , Bristol plan. Bristol, the Association, [1957]. 8 pp. 1*s*.

*BRITISH union-catalogue of periodicals. a record of the periodicals of the world, from the seventeenth century to the present day, in British libraries; initiated by Theodore Besterman, ed. by James D. Stewart with Muriel E. Hammond and Erwin Saenger. Vol. 3, L–R. London, Butterworths, 1957. xxxi, 767 pp. 190*s*.

CLEMENCE, Will
The student's guide to screen process printing. London, Guildhall Press, [1957]. 80 pp. illus. 8*s*.

CRANE, E. J., *and others*
A guide to the literature of chemistry, [by] E. J. Crane, Austin M. Patterson [and] Eleanor B. Marr. 2nd ed. New York, Wiley; London, Chapman & Hall, 1957. xv, 397 pp. $9.50; 74*s*.

CURTIS, W. E.
Technical and scientific information in the manufacturing industries of the North East. Newcastle upon Tyne, North East Industrial and Development Association, [1957]. 57 pp. tables. *gr*.

*DEUTSCHER NORMENAUSSCHUSS
Einführung in die DIN-Normen, von Martin Klein. 2 überarb. und erweiterte Aufl. Stuttgart, Teubner, 1956. vi, 298 pp. tables. diagrs. DM 16.80.

DOUGLASS, Paul
Communication through reports. Englewood Cliffs, N J , Prentice-Hall; London, Bailey Bros., 1957. xii, 410 pp. tables. diagrs. $5.95; 54*s*.

FISHER, Ray Wall
Alphabetic indexing: a combination textbook-workbook. 2nd ed. Cincinnati, South-Western Publishing Company, 1956. 48 pp. 56*c*.

FLEISCHHACK, Curt, *and* DUX, Werner
Das Schrifttum der Landwirtschaft· systematisches Verzeichnis der in der deutschen Sprache erschienen Veröffentlichungen auf dem Gebiet der Land- und Forstwirtschaftswissenschaften einschliesslich Gartenbau, Fischwirtschaft und Jagd. Leipzig, Verlag für Buch- und Bibliothekswesen, 1956. xvi, 464 pp.

Fritzsche, Paul
Vom Manuskript zum Buch: ein Überblick uber die industrielle Buchherstellung. 2 verb. aufl. Leipzig, Fachbuchverlag, 1956. [4], 146 pp. illus. plates facsims. tables. diagrs. DM 5.80.

Frykholm, Lars
Lantbruksforskningens och dess hjalpvetenskapers bibliografiska hjalpmedel; i urval. Uppsala, [the author], 1957. 74 pp. mimeographed.
[Bibliographical aids of agriculture and related subjects; a selected list.]

Hall, Margaret, *and others*
A bibliography in economics for the Oxford Honour School of Philosophy, Politics and Economics; [comp. by Margaret Hall, G. B. Richardson and J. R. Sargent]. Oxford, University Press, 1957. 80 pp. 6*s*. 6*d*.

Hay, Robert D., *and* Lesikar, Raymond V.
Business report writing. Homewood, Ill., Irwin, 1957. viii, 352 pp. tables. diagrs. $6.60.

Hoggart, Richard
The uses of literacy: aspects of working-class life, with special reference to publications and entertainments. London, Chatto and Windus, 1957. 319 pp. 25*s*.

Industrial Research Institute
Research is people: a discussion of the recruitment, motivation, recognition rating, and evaluation of research personnel. New York, New York University Press for the Institute, 1956. viii, 69 pp. illus. tables. diagrs. $4.

Institut Belge de Normalisation
Reproduction documentaire. microcopies sur supports transparents, dimensions recommandées. Bruxelles, l'Institut, 1956. 1 p (NBN 423. 1956). [2*s*. 4*d*.]

*Italy. Direzione Generale Accademie e Biblioteche
Annuario delle biblioteche italiane 2 ed. Parte I (A–M). Roma, la Direzione, 1956. xi, 476 pp plates.

Lancaster, Joan C.
Bibliography of historical works issued in the United Kingdom, 1946–1956, comp. for the Sixth Anglo-American Conference of historians. London, University of London Institute of Historical Research, 1957. xxii, 388 pp. 25*s*.

Leaper, W. J.
Copyright and performing rights. London, Stevens, 1957. xi, 231 pp. 25*s*.

Library Association. London and Home Counties Branch.
Education, libraries and the use of books; being papers read at the week-end conference held at Worthing, 26th–28th April, 1957. Gillingham, the Branch, 1957. 7*s*. 6*d*.

*Library Association. Medical Section
Directory of medical libraries in the British Isles. London, the Association, 1957. viii, 91 pp. 13*s*. (9*s*. 6*d*. to members).

*London and Home Counties Regional Advisory Council for Higher Technological Education
Research for industry: a survey of industrial research in progress in technical colleges in the region in the year 1956. London, the Council, 1956. 18 pp. 1*s*. 6*d*.

*London. University. Institute of Advanced Legal Studies
A survey of legal periodicals: union catalogue of holdings in British libraries. 2nd ed. London, the Institute, 1957. ix, 82 pp. (Publication no. 1)

London. University. *School of Librarianship and Archives*
Guide to unpublished research materials: lectures delivered at a vacation course; ed. by Ronald Staveley. London, Library Association, 1957. vii, 141 pp. 21*s*.

McKeon, Richard, *and others*
The freedom to read. perspective and program, by Richard McKeon, Robert K. Merton [and] Walter Gellhorn. New York, Bowker for National Book Committee, 1957. xvii, 110 pp. $2.50.

Metcalf, Keyes D.
The Hampshire Inter-Library Center: a survey of its background and its problems, with recommendations for the future. South Hadley, the Center, 1957. 31 pp.

New South Wales. Public Library
A general introduction to library practice, with supplements: School library practice, General reference and special library practice. 2nd ed. Sydney, the Library, 1955. v, 141 pp. front. tables. diagrs. 25*s*.

*Organisation for European Economic Co-operation. European Productivity Agency
International guide to European sources of technical information. Paris, O.E.E.C.; [London, H.M.S O.], 1957 439 pp. 16*s*.; 800*fr*.

Palmer, D. J.
Writing reports. London, Soil Mechanics, 1957 24 pp. facsims.

Parker, William Riley
The national interest and foreign languages: a discussion guide and work paper prepared for citizen consultations sponsored by the U.S. National Commission for Unesco, Department of State. Washington, U.S. Government Printing Office, 1957. vi, 133 pp. (Department of State publication 6389.) 65*c*.

The Penrose annual: a review of the graphic arts; ed. by R. B. Fishenden. Vol. 51. London, Lund Humphries, 1957.

[24], 164 pp. front. illus. plates. tables. diagrs. 35*s.*

*Periodicheskaia pechat' SSSR, 1917–1949; biblograficheskii ukazatel': zhurnaly, trudy i biulleteni po transportu, sviazi i kommunalnomu delu. Moskva, Vsesoiuznaia Knizhnaia Palata, 1955. 123 pp. [8*s.*]

Reichel, Max
Die fortlaufenden astronomischen Veroffentlichungen in ihrer geschichtlichen Entwicklung. Koln, Greven, 1957. 124 pp. mimeographed. (Arbetien aus dem Bibliothekar-Lehrinstitut des Landes Nordrhein-Westfalen, Heft 12.) DM 9.20.

Ross, H. John
How to make a procedure manual. 4th ed. Miami, Office Research Institute, 1956. ix, 123 pp. mimeographed. $6.50.

Ross, H. John
Integrated data processing for every office. Miami, Office Research Institute, 1957. 80 pp. $2.

Rozan, Jean-François
La prise de notes en interprétation consécutive; préface de Robert Confino. Genève, Georg & Cie, 1956. 73 pp.

Special Libraries Association
Bibliography of new guides and aides [sic] to public documents use, 1953–1956; comp. by Jerome K. Wilcox. New York, the Association, 1957. [3], 16 pp. (SLA bibliography no. 2.) $1.50.

Teneyck, Hendrix
Glossary of terms used in microreproduction. Hingham, Mass., National Microfilm Association, 1955 88 pp. $2.50.

Thomas Alva Edison Foundation
Strengthening science education for youth and industry; proceedings of the seventh Thomas Alva Edison Foundation institute, November 19–20, 1956. New York, New York University Press, 1957. ix, 162 pp. $5.

Thompson, Wayne N.
Fundamentals of communication: an integrated approach. New York, London, McGraw-Hill, 1957. x, 582 pp. illus. diagrs. $5; 37*s.* 6*d.*

United Nations Educational, Scientific and Technical Organization
scientific and technical translating and other aspects of the language problem; [comp. by J. E. Holmstrom]. Paris, Unesco; [London, H.M.S.O.], 1957. 282 pp. tables. diagrs. (Documentation and terminology of science) 20*s.*; 1000*fr.*

United States. Library of Congress. *General Reference and Bibliography Division*
Africa South of the Sahara: a selected, annotated list of writings, 1951–1956; comp. by Helen F. Conover. Washington, the Library, 1957. vii, 269 pp. mimeographed. $2.

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De trefwoorden catalogus: grondslagen en inrichting. 2 herziene druk. 's-Gravenhage, Staatsdrukkerij- en Uitgeverijbedrijf, 1956. 90 pp.

White, William H., *jr.*
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Articles and Papers

Allery, G. D.
The transmission of data signals: facilities in the United Kingdom. *O & M Bulletin*, vol. 12, no. 3, June, 1957, pp. 111–6.

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Microcards, microprint, and microfilms for medical libraries. *Bulletin of the Medical Library Association*, vol. 45, no. 2, April, 1957, pp. 139–48.

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Calcott, W. S., *and* Maurer, C. P.
A decimal system for the classification of chemical research documents. [Wilmington, Del.], E. I. du Pont de Nemours, 1958. 60 pp. tables.

Chatterji, N. N.
Indexing as a tool of studying volume of literature: literature on agriculture in India. *Indian Librarian*, vol. 11, no. 4, March, 1957, pp. 157–9.

Coates, E. J.
The use of *B.N.B.* in dictionary cataloguing. *Library Association Record*, vol. 59, no. 6, June, 1957, pp. 197–202.

Edge, Eleanor B., *and others*
System for indexing research reports using a punched card machine, by Eleanor B. Edge, Norman G. Fisher and Lucy A. Bannister. [Wilmington, Del.], du Pont de Nemours, [1957]. 16 pp. mimeographed.

Fellows, Erwin W.
Current bibliographical services in the social sciences. *American Documentation*, vol. 8, no. 3, July, 1957, pp. 153–67.

Forsyth, J. W.
Co-operative book provision. Scottish Library Association. *Proceedings of the annual conference*, 1957, pp. 22–34.

Haylor, L. J. H., *and* Kennedy, R. A.
Sources of translations of aeronautical interest in NATO countries. Paris, N.A.T.O., 1956. 50 pp. (Advisory Group for Aeronautical Research and Development report 56.)

Hellum, Bertha D., *and* Biggins, Albert J.
Cost-saving in book cataloging. *Library Journal*, vol. 82, no. 13, July, 1957, pp. 1729–30.

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On pre-filing sorting methodology. *Library Resources and Technical Services*, vol. 1, no. 2, Spring, 1957, pp. 109–13.

Kyle, Barbara
Current documentation topics and their relevance to social science literature. *Review of Documentation*, vol. 24, no. 3, August, 1957, pp. 107–17.

Lovett, Robert W.
Business records in libraries. *American Archivist*, vol. 20, no. 3, July, 1957, pp. 253–61.

Pritsker, Alan B., *and* Sadler, J. William
An evaluation of microfilm as a method of book storage. *College and Research Libraries*, vol. 18, no. 4, July, 1957, pp. 290–6.

Rakov, B. M , *and* Cherenin, V. P.
Machines for retrieving information in the U.S.S R. *Unesco Bulletin for Libraries*, vol. 11, no. 8–9, August–September, 1957, pp. 192–7

Ranganathan, S. R.
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Zone analysis and mixed notation. *IASLIC Bulletin*, vol. 1, no. 2, December, 1956, pp. 44–47.

Ready, William B.
Acquisition by standing order. *Library Resources and Technical Services*, vol. 1, no 2, Spring, 1957, pp. 85–88.

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Shelving books by size. *A.L.A. Bulletin*, vol. 51, no. 6, June, 1957, pp. 435–7. [With comments by Ralph T. Esterquest]

Salvan, Paul, *and* Poindron, Paul
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Scheerer, George
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Scott, Peter
Developments in rapid-copying machines. *American Archivist*, vol. 20, no. 3, July, 1957, pp. 239–51.

Short, M. A.
Searching the literature of physical and inorganic chemistry. *Research*, vol. 10, no. 8, August, 1957, pp. 313–8.

Uridge, Margaret D.
Interlibrary lending and similar extension services. *Library Trends*, vol. 6, no. 1, July, 1957, pp. 66–86.

Urquhart, D. J.
Some functions of the National Lending Library for Science and Technology. *Library Association Record*, vol. 59, no. 6, June, 1957, pp. 203–6.

Vickery, B. C.
Depth classification, 24: Common facets and phase relations. *Annals of Library Science*, vol. 4, no. 1, March, 1957, pp. 8–12.

Warren, Joan Patricia, *and* Barnard, Walter M.
Cataloging statistics: report on an experiment. *Library Resources and Technical Services*, vol. 1, no. 2, Spring, 1957, pp. 67–81.

What is the total cost of preparing the average letter in the average office? *Office Magazine*, vol. 4, no. 44, August, 1957, p. 593.

Wood, G. Congdon
A detailed biology code for storing, retrieving, and correlating chemical-biological data. *American Documentation*, vol. 8, no. 3, July, 1957, pp. 168–80.

Yenawine, Wayne S., *ed.*
Current trends in circulation services. *Library Trends*, vol. 6, no. 1, July, 1957, pp. 1–100.

All the above items may be borrowed from Aslib Library, except those marked with an asterisk. Most of these are available for consultation in the Library, apart from a few for which locations in other libraries can be given by the Librarian.

ASLIB INFORMATION

ASLIB CALENDAR

NOVEMBER

WEDNESDAY 27th. Northern Branch meeting. See paragraph below.

DECEMBER

MONDAY 16th–WEDNESDAY 18th. Course on Advanced Classification and Indexing. See paragraph below.

1958

JANUARY

TUESDAY 7th–THURSDAY 9th. Course on Aeronautical Documentation. See paragraph below.

SEPTEMBER

FRIDAY 5th–MONDAY 8th. Annual Conference, at Nottingham University.

Northern Branch Meeting

The Branch meeting to be held on Wednesday 27th November will be at 2.30 p.m. in the Central Library, Burnley. The speakers will be Mr. P. Colehan, Science Librarian of the Sheffield City Libraries, and Mr. J. Ireland, Librarian of Peter Spence and Company Limited.

Training Courses

Aslib intends to organize a more extensive programme of training courses in special subjects. One on acquisition, handling and exploitation of periodicals and one on advanced classification and indexing have already been announced. There is to be a repeat of the very successful course on handling Soviet and east European material. Subjects of other courses planned or in preparation are: organization of science and technology, patents and patent law, work with technical reports, production of library and information department publications, good relations with users and presentation of information to management and administration, and mechanical information retrieval. Details of all these courses will be sent to members as preparations are completed, and application for enrolment should not be made until these are available.

Course on Handling Soviet and East European Material

Following the success of the course of evening lectures on this subject given in March, April and May, a similar programme has been arranged for the winter. The lectures will take place at 4 Palace Gate from 6.30 to 8 p.m. on Thursdays from 21st November to 16th January, omitting 19th and 26th December. The lecturer will again be Mr. Anthony Thompson, M.A., F.L.A., Royal Society of Arts Diploma in Advanced Russian.

Students who take the whole course should become familiar with the Russian alphabet, transliteration problems, and the most important transliteration schemes, and be able to identify the major east European languages. There will be two visits to libraries where Soviet and east European materials are handled on a large scale, and two lectures will be devoted to methods of publishing scientific and technical information.

A notice of the course was distributed to members in October and those who have not already applied are invited to write to Aslib for a syllabus. The fee for the complete course is three guineas and for separate lectures 10*s*. each.

Course on Organization of Science and Technology

This course, planned to be held in London as a series of eight to ten evening lectures, is intended to give librarians and information workers who are not science or technology graduates an insight into the workings of the science-technology world. The lectures will deal with the scope of the main sciences and technologies and their inter-relations, types of scientific organizations and their functions, the scientific method and the conduct of research, the functions of science, publication methods, and the use by scientists and technologists of libraries and literature. The fee will be approximately ten guineas.

The course will be different in scope from anything Aslib has done before, and this makes it unusually difficult to foresee the demand and to book adequate accommodation. For this reason provisional enrolments will be accepted before full details are available. These enrolments will not be binding on members, who will be asked to confirm them when they have received the full details, but provisional enrolment will give priority over later applicants. No money should be sent until enrolment is confirmed.

Aeronautical Group. Course

A short course on Aeronautical Documentation will be held at the College of Aeronautics, Cranfield, from Tuesday 7th to Thursday 9th January 1958. The course is of a specialist nature, and is intended to broaden the knowledge of those already working in the field of aeronautical information and also to be of value to experienced library workers in other branches of science or engineering who may occasionally have to make use of aeronautical information. It will be restricted to twenty-five students.

The fee for the course is 70*s*., and a charge of 60*s*. will be made for accommodation.

Application forms can be obtained from Mr. C. W. Cleverdon, The College of Aeronautics, Cranfield, Bucks.

Textile Information Course

The three-day course on Textile Information Work held at the Manchester College of Science and Technology in September attracted over thirty students from all parts of the country. The course, which was initiated by the Aslib Textile Group, was mainly intended as an aid to those who were carrying out *ad hoc* information work as a part of their normal duties in some other capacity in their firms, and at least half of those who attended the course fitted into this category. The remainder included new-comers to textile information work and information workers who wished to expand their knowledge of the textile field.

The lectures, which were mainly given by members of the Textile Group, were supplemented by the D.S.I.R. film 'Just an Idea' and demonstrations of microfilm and microcard readers provided by Micro Methods Ltd. On the last day of the course students paid visits of inspection to the libraries of the British Rayon Research Association and the Dyestuffs Division of Imperial Chemical Industries Ltd., Blackley.

National Central Library

In the Annual Report for the year ending 28th February 1957 which has just been issued, the National Central Library announces that it will not accept requests for the loan of British books published after 1st January 1958, and asks Regional Systems to consider ways of making themselves self-sufficient as regards current British books. This, however, will not help those special libraries which do not use regional systems, particularly those in the London area, who are not able to use any regional system. The report shows a slight decrease in the total number of inquiries dealt with, but an increase in international loans. Considerably more items were lent to libraries overseas than were borrowed by British libraries from overseas. The Russian Union Catalogue was only able to add the stocks of one new library, but it received the highest number of inquiries ever.

D.S.I.R. Conference

'Recent innovations in getting results across to industry' was the theme of the Conference of Directors and Information Officers of Research Organizations held by D.S.I.R. on 15th October, in the L.C.C. County Hall, London.

Ten short papers were given:

'Contacts with Industry in Wales' by Dr. R. O. Jones, D.S.I.R. Liaison Officer in Wales.

'Liaison Officers and Publications' by Mr. E. Martindale, D.S.I.R. Liaison Officer in Scotland. Showing how different methods can supplement one another in establishing and maintaining liaison between science and industry.

'An experiment in communication' by Mr. W. S. Robertson, Scottish Council (Development and Industry), an account of the Technical Liaison Service established in Scotland with the object of increasing the use of scientific knowledge and methods by small and medium-sized industrial companies.

'Visual aids' by Mr. C. W. Hanson, British Scientific Instrument Research Association. A description of the use made of wall charts in recording and assessing the value and uses of an information service.

'Models and Visits Abroad' by Mr. A. Gordon Foster, Furniture Development Council. The speaker described the successful use of models as a means of communicating constructional developments and emphasized the need for careful planning of study groups abroad and their success in establishing contact with industry.

'Lectures and Schools of Instruction' by Dr. A. E. Dodd, British Ceramic Research Association.

'P.E.R.A.'s Mobile Unit' by Mr. R. L. Hayward, Production Engineering Research Association of Great Britain. Design, building and equipment of a mobile lecture theatre and demonstration unit.

'S.A.T.R.A.'s Display Methods' by Miss C. Glover and Mr. E. J. Hall, British Boot, Shoe and Allied Trades Research Association. Plans and construction details for portable display stands and their lighting.

'Using an Outside Agency as a Public Relations Adviser' by Dr. F. H. Banfield, British Food Manufacturing Industries Research Association.

'The Work of a P.R.O. in a Research Association' by Mr. M. F. A. George, British Leather Manufacturers' Research Association.

The conference was attended by nearly 150 delegates and display stands illustrated the work of many of the organizations represented including Aslib. Copies of some of the papers are available from D.S.I.R. and it is intended to publish the proceedings in printed form.

Slavic and East European Materials

In the United States, the Association of Research Libraries in conjunction with the Social Science Research Council is to conduct a study of American library resources and needs in Slavic and east European materials.

The aim of this project is to find solutions to the serious problems surrounding the acquisition and handling of material from east Europe. The study will be based on questionnaires, interviews and the checking of library holdings, and the co-operation of librarians and scholars is to be sought.

The study will be directed by Melville J. Ruggles, Vice-President of the Council on Library Resources, Inc., of Washington, D.C., assisted by Vaclav Mostecky, Professor of Library Science at Catholic University in Washington, D.C. They began work in September and hope to present their report by next summer. Those interested should write to Mr. Melville J. Ruggles, P.O. Box 1703, Washington 13, D.C.

Bibliography of Social Work and Administration

The Fourth Supplement of the *Bibliography* has now been published. It covers the year 1956. *Bibliography of Social Work and Administration* is a classified list of articles from selected British periodicals covering the years 1930–52. It was commissioned by the Joint University Council and compiled by Miss F. M. Birkett, M.A., F.L.A.

In addition to general articles the classification covers: population, eugenics, labour, social work and casework, social services, criminology and penology, social psychology, and leisure. Copies of the *Bibliography* and supplements are obtainable from The Joint University Council for Social & Public Administration, 5 Victoria Street, London, S.W.1. Prices are: *Bibliography* 40*s.*, First Supplement (1952–53) 20*s.*, Second, Third, and Fourth Supplements (1954, 1955, 1956) 5*s.* each.

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Wanted

'Sensory methods for Measuring Differences in Food Quality', *Agriculture Information Bulletin no* 34. Bureau Human Nutrition and Home Economics. U S. Department Agriculture, August 1951. Prepared by E. H. Dawson and B. L. Harris. Required by County Laboratories Ltd., Information Officer, Honeypot Lane, Stanmore, Middlesex.

For Sale

Chemischens-Zentralblatt, jhg. 68, 1897 to jhg 126, 1955 There are small number of copies missing from the sequence. For further information apply to Librarian, A.E.R.E., Harwell, nr. Didcot, Berks.

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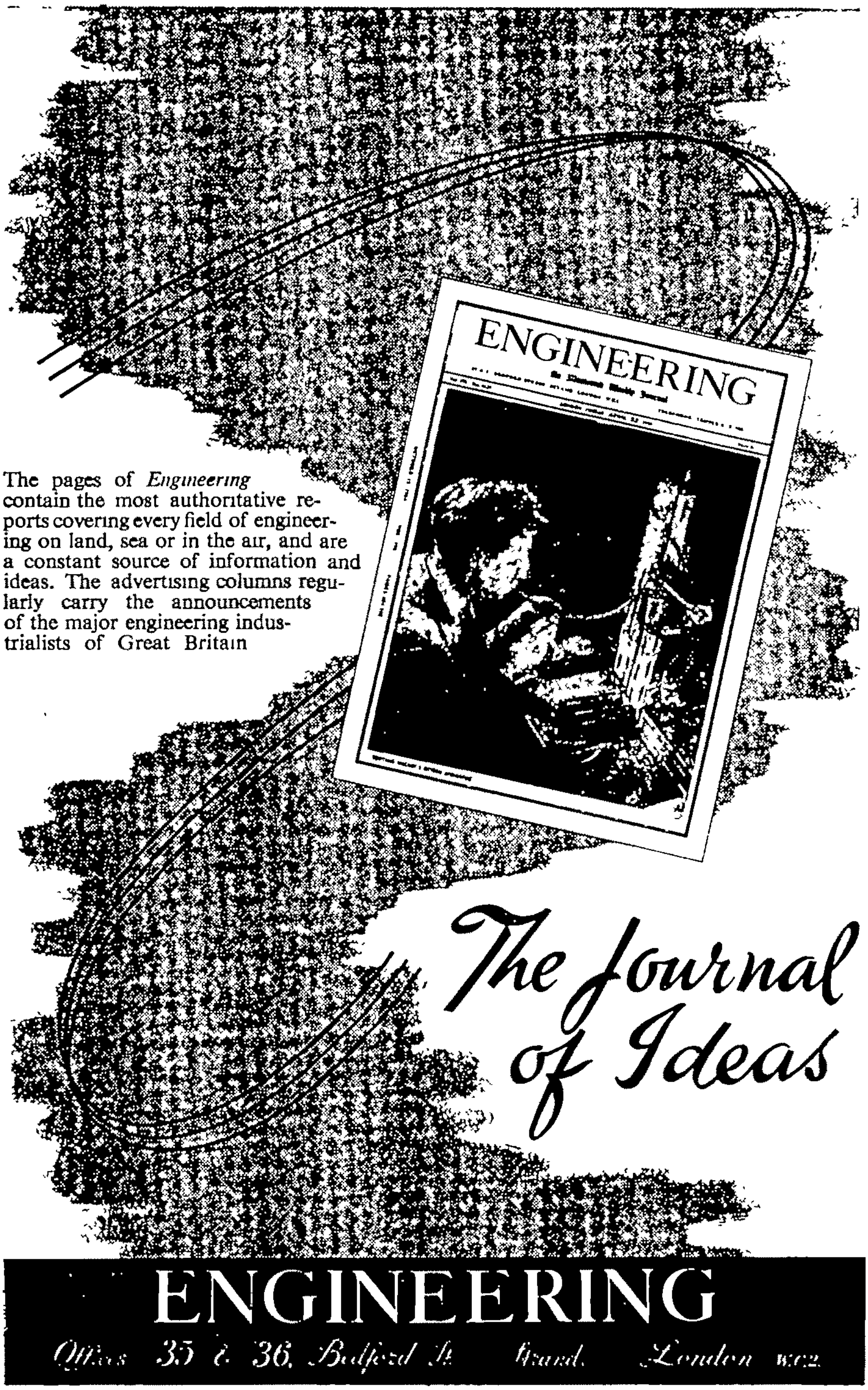

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Volume 9 **December 1957** **Number 12**

LIBRARIES IN TECHNICAL COLLEGES

BY SIR EDWARD BOYLE

Parliamentary Secretary to the Ministry of Education

Conference on Library Services in Technical Colleges, London, 30th October 1957*

THE PROVISION of library services for technical colleges is of course a subject for the experts. I am glad to see that you have been able to get the services of so many speakers who are well versed in the technicalities of this subject.

As the programme card so rightly says, the Government's plans for substantial developments in technical education call for a reappraisal of the part which libraries can play. Moreover, the growth of technical information services since the war makes it essential that there should be close co-operation between those who formulate policies for the technical college libraries and also those who represent industry.

May I at the start just remind you of some of the immense progress that has already been made in implementing the Government's plans for technical education. There is very great interest in this subject in Britain at the present time and I think it is just worth remembering what has been achieved already.

Since the publication of the White Paper eighteen months ago about 320 building projects in England and Wales estimated to cost a total of over £60,000,000 have been approved in principle. The number of sandwich courses has doubled from one hundred to two hundred. The Hives Council have recognized forty-nine courses as leading to the Diploma in Technology. The number of full-time teachers employed in technical colleges increased in 1956 by 950. I must say that going round the country as I have had the chance of doing during the long recess I have no doubt that substantial progress is being made all along the line. In those colleges designed to be colleges of advanced technology much advanced work is already being done and a good many elementary courses are being transferred elsewhere. We are making steady progress all along the line.

The bald figures conceal some very real improvements in the morale and standing of the technical colleges. I have spent a great deal of time in recent months in travelling round widely varying local education authorities all over the country.

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* The two papers given in the afternoon session, by Dr. J. Topping and Mr. P. P. Love, will be printed in the January 1958 issue of *Aslib Proceedings*.

Some of them were counties, some boroughs, some urban authorities, and some of them were rural authorities. I am impressed by the immense change in attitude towards technical colleges which can be perceived everywhere. They are now no longer regarded as providing opportunities for those who, through the accidents of fate or lack of basic ability, fail to get admission to an engineering course at a university. They are now seen as an integral part of the education service which provides facilities that cannot be found elsewhere. For many people the technical colleges are no longer the second-best choice. This is undoubtedly the result of a very fine response from industry who have been quick to see the quality of the products of technical colleges. Perhaps I can repeat what many people have said in recent years, that the closer the contact between industry and technical colleges the better. I hope that those in industry will keep in close touch with colleges and will not hesitate to serve on governing bodies when they get the chance.

The figures which I quoted earlier illustrate that the White Paper policy involves the use of large supplies of highly skilled manpower and a generous allocation of capital expenditure. But the very size of the technical education programme produces its own form of anxieties. We should be constantly asking ourselves whether the young men and women who are taking up courses at technical colleges are being given everything that they really need. We are, after all, asking them to take up a course of intellectual discipline which will deprive them of a great deal of spare time in what many would regard as their most precious years. It is essential that they are provided with everything they need to enable them to pursue advanced courses of study.

At every stage of education the provision of libraries is the surest indication of how much we care for the individual needs of students. It is fatally easy for the layman to assume that a student can get through a highly specialized course by means of formal class and laboratory and practical work alone. But if we are to produce the sort of technologist and technician that we most badly need—I mean the sort of man whose individual judgment can be trusted and who can be expected to lead others in development work—then we must see that his training includes a good measure of quiet and contemplative browsing amongst the books of his own selection

Moreover, the increasing complexity of scientific and technical studies makes it impossible for any scientific worker to rely for ever on the basic elements of his subject which he learnt during his student days at a technical college. Students must learn quickly the importance of keeping abreast of development by reading technical journals. We are always being told about experts learning more and more about less and less, and Professor Toynbee says what a shocking thing it is. I think that is absolute nonsense. If you want to keep up to date in any subject you have to read what is being produced. Knowledge is advancing very rapidly, and whether it be academic subjects such as history, which I took myself, or technical studies nobody today can afford not to keep up with what is being written in journals and the more specialized periodicals. These can only be provided in an easily accessible library in the college.

I think it would be very helpful, too, if publishers could develop the habit of sometimes collecting some of the most valuable papers in a sort of collected volume of papers. It is always exactly those numbers of a periodical which have valuable papers which are most frequently out of the shelves, and I wish we could take a leaf out of the modern philosopher's book and produce volumes of special studies of particular value to the students learning a subject. And when they eventually leave the college it must be possible for them and their colleagues in industry to go back to the college libraries and get the material which they want.

This brings me to a second point which was emphasized in the Ministry circular on the subject.*

One of the first jobs of a new Minister of Education is to gain an encyclopædic knowledge of the circulars of the past few years. The circular emphasized that the first duty of the library must always be to those working in the college itself. But the Government have constantly emphasized the importance of close co-operation between technical colleges and the industries that they serve. To use a rather overworked phrase, we expect technical colleges to be power houses of education in the area which they serve. We hope, however, that college libraries will also be able to offer assistance to industry, especially to those firms which have no information service of their own. We hope that technical colleges will play an important part in leading the social and educational life of their areas and it is entirely appropriate that they should be ready to give assistance of this sort to nearby industry.

There is something more still. I have already spoken of the important part which libraries can play, the development of independent judgment and intellectual maturity. But we can also look to the well-stocked library to play its part in the development of a full and liberal education. The private use of a library goes along with all of the other less formal teaching methods such as seminars, group discussions and project assignments. I recall some years ago a book by the thinker Juvenal, who said that informal discussions round the dining table are more valuable than lectures. There may be some snobbery in that but it is certainly true that browsing in a library is an absolutely indispensable adjunct to group seminars and projects.

I may add here that I have been considerably impressed with the libraries I have seen, both in schools and technical colleges, over the last eight months. I know that books today—and it is a very real problem—cost a great deal of money. Yet I am quite sure that they are always a first-class investment for any educational institution and I am very glad indeed that an increasing number of local authorities have come to recognize their importance. It is encouraging to find the number of local authorities who are making an increased grant towards local library services. In fact I should say without any hesitation that first-class libraries in educational institutions are lasting assets for which tax-payers and rate-payers ought always to be willing to pay. I believe I am right in saying that the circulation of non-fiction literature in our public libraries is today a higher rate than ever before. In the same way, I don't think any visitor to our schools and technical colleges could have any doubt that the libraries are fully utilized by those whom they are designed to serve. One judges that best by the number of books not in the shelves at any given time and I think it is beyond question that pupils are making full use of the libraries open to them. Do not let us forget, also, the number of technical students who are genuinely interested in the Arts, and whose concern with draughtmanship, for example, ranges far beyond the proper construction of an ellipse and the rules for isometric projection. Furthermore, it is surely both natural and beneficial that those students who are training to make a direct contribution to the national income should also display considerable interest on how our present-day society is organized, and in the great contribution which modern industrial development has made towards the elimination of human drudgery and the extension of freedom.

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* Ministry of Education. Circular 322 (12th April 1957). *Libraries in technical colleges.*

I know well that most of what I have said this morning will not be news to you. My main purpose in coming here this morning is to wish you well in your important discussions and to say that the Ministry will watch with interest the result of them.

On behalf of the Minister I repeat the policy stated in Circular 322. We want better and larger and more widespread use of libraries in technical colleges. We are sure that this can be achieved by close co-operation between local authorities and industry and such excellent co-ordinating organizations as Aslib. Libraries are essential to the development of the young men and women upon whom the future of this country depends. We cannot put too much care into thinking out how best and most fruitfully to develop them.

May I just end by putting these two points? The first is that the whole of our education system must be looked at all together. That is to say that first-class library services are important all the way up from the primary schools through the secondary schools to the universities and technical colleges. Secondly, today very rightly there is an enormous amount of interest in this country in technical development, but if we are to achieve what we should in this field it is not going to be enough simply to have a sufficient supply of really first-class scientists, nuclear physicists and technicians. We must also have second-grade craftsmen and technicians, and sometimes I think that our future depends not on the supply of alphas but on the supply of competent betas who can play their part in team work and perhaps can aspire to some leadership on their own account. It is in that respect more than any other that we have to raise our supply still higher. The provision of first-class libraries fulfils an important part in this objective. I congratulate you on the co-ordinating work you have already done and I shall await with great interest the result of your discussions in your conference today.

LIBRARIES: A LIBERAL ELEMENT IN TECHNICAL EDUCATION

BY LORD VERULAM, M.A., COMP.I.E.E., J.P.

Conference on Library Services in Technical Colleges,
London, 30th October 1957

A MONTH or two ago, when Mr. Wilson first asked me to undertake this assignment and to deliver this paper, I was naturally fearful of what might lie before me. Was I expected to criticize present trends in technical education, at a moment when the nation is crying out for more of it? Should I be urging the claims of a liberal education in a den of technological lions? At least it is a comfort to find this morning that the lions, and their den, look amiable enough; some of you at least appear to have been weighed on some bathroom balance and not found wanting.

Might it be that I am required to paddle delicately on the shifting waters that swirl between the classical Scylla and the modern Charybdis? Shall I try not once but, like the giants, thrice to set Pelion upon Ossa, to superimpose the liberal on the material, only—like the giants—to fail, leaving the gods sublimely untouched on the summit of lofty Olympus? Am I to suggest that the use of knowledge—and remember that 'science' is but the Latin name for 'knowledge'—can be made more profound, or more useful, or more pleasant, or perhaps more successful and profitable, if the user is versed in the great tradition of letters and of thought which has made all knowledge, and all science, and all philosophy, possible?

The Lady Psyche put the case for the classical education with some force, when she sang:

> If you'd climb the Helicon,
> You should read Anacreon,
> Ovid's Metamorphoses,
> Likewise Aristophanes,
> And the works of Juvenal;
> These are worth attention, all;
> But, if you will be advised,
> You will get them Bowdlerized!

In these plain-speaking post-Victorian days we should probably prefer them abstracted, or 'Readers' Digested', rather than see them subjected to the puritanical mercies of Thomas Bowdler.

You may remember that the chorus replied to Lady Psyche's admonition, with all the lyric fervour that a liberal scientist of the twentieth century might wish to bring to his credo:

> And thus to empyrean height
> Of every kind of lore,
> In search of wisdom's pure delight,
> Ambitiously we soar.
> In trying to achieve success
> No envy racks our heart,
> For all we know and all we guess
> We mutually impart!

Shades of Alan Nunn-May, Dr. Fuchs and Pontecorvo!

If I have any qualifications whatever to speak on this subject it can only be that my own education so far has been classical till I was eighteen; then I took a degree in zoology and comparative anatomy in the Oxford Honours School of Natural Sciences; since then I have worked in factories and offices, and studied foreign languages in my spare time. In other words, I have no qualifications whatsoever; however, I have seen something of several sides of life, and I hope that there is still some more to come.

I believe it to be of critical, crucial, clamant importance that the future of this country should not be thought to lie in aspirations that are only materialistic, whether they are to be achieved by ourselves, or in partnership with Europe, or with the Commonwealth, or with the N.A.T.O. countries. We do well to remember that the achievements hitherto of Great Britain, in scientific no less than in other fields, have always had a tinge of the amateur about them, and have yet displayed a world-shaking sense of inspiration because of that amateurish flavour. We must always pay homage to Galileo and Copernicus, to Paracelsus and Pasteur, to Leuwenhoek and Leonardo, whose stature no national envy can ever lessen. But we forget—at our peril—that in the fields of industry and of science this is the country where great achievements have been born from simple observations, more frequently and more dramatically than anywhere else—one need but mention William Harvey straining his eyes to see what was happening in the webbed foot of a frog; Isaac Newton and his apple; Crompton and Arkwright heralding the dawn of the Industrial Revolution amidst a clatter and a clutter of primitive hand-operated contraptions; Charles Darwin sailing the world in a little ship whose voyage was destined to alter mankind's whole conception of the mystery of life itself; Faraday playing with an iron magnet and some iron filings (and so starting a train of thought which was to lead to the elucidation of electromagnetic induction); William Murdock inventing coal-gas lighting, and Humphry Davy, his great contemporary, who not only made coal-mining safer from the risk of explosion but discovered potassium, sodium and chlorine into the bargain; Joseph Lister, the son of a Romford wine merchant, who made modern surgery possible; Rutherford, the New Zealand physicist working at Cambridge, who envisaged the structure of the atomic nucleus by deduction in advance of proof; Alexander Fleming, who described the discovery of penicillin in a scientific journal twelve years before the rest of the world recognized what it meant, let alone that it was the greatest medical advance of the present century; Sir Charles Parsons, who patented the gas turbine fifty years before one was ever built; and Whittle, the R.A.F. ex-apprentice, who believed in jet flight long before he achieved it.

These men are but a few of the stars in that galaxy of scientific talent which these islands have, as it were, thrown up. None of those I have mentioned, and there are hundreds more, were (with the possible exception of Newton) classical scholars. But equally, none of them were or are technologists in any narrow sense of the word. Most of them were remarkable for their other interests, for the breadth of their vision and for the humanity of their characters. Few of them even enjoyed the most advanced technical education of which their day and age were capable.

I believe that perhaps we must regard both the literary and the scientific genius that has emerged in these islands, both of which have been pre-eminent in the world, as something akin to the emergence of the great classical composers of music in Germany and Austria, something that is a fact but is never explained, something that can partly be accounted for by hereditary or economic or social or even climatic circumstances, but never wholly.

Please do not imagine that I am seeking to introduce an address on technical libraries by propounding a homily on the occurrence of genius, nor do I pretend that what appears to be fortuitous in the advance of civilization can be cultivated by those of you who own, control, sponsor or run technical libraries. I do, however, believe that our very future as a nation depends not so much on industrial power, in the American or the Russian sense (and I have visited numerous factories in both of those great countries), but upon the degree and the frequency of our achievements as pioneers, and on the initiative and skill with which we exploit such achievements and ideas. If I am right in my conviction, it follows that the cultural atmosphere of the college and of the university where technical subjects are taught is a matter of no little moment, because it is in the soil of culture and not in the barren fields of technique that tender plants first see the light.

A few years ago, towards the end of the last war, I had occasion to visit on business what was then a famous aircraft factory 'somewhere in the home counties'. The managing director was kind enough to take me round his works, employing several thousand people, after we had discussed our business; after touring the shops we walked along a covered way to a group of prefabricated huts standing without the main works. He opened the door at one end of this line of huts and, with a gesture, announced that this was 'the Corridor for the Release of Genius'. Here were accommodated some of his designers, who worked what hours they pleased, drank what drinks they preferred, and reclined on couches provided by the firm to gaze upwards at models showing the projected future shape of aircraft, suspended (like Peter Pan) by wires from the ceiling. There were pattern-makers available to fashion in polished wood the shapes that were sketched out by the designers; the managing director explained to me that the first conception of an aircraft form was something born in the mind's eye and not the result of mathematical analysis, which followed but did not precede. I wandered spell-bound through room after room, each furnished more surprisingly than the last, each inhabited by one or more would-be creators, highly paid, well looked after, chargeable against profits before taxation. I thought of Bach and Beethoven, Lister and Pasteur, and wondered. I asked the obvious question: 'What kind of library facilities are available should the designer wish to refresh his memory, for example, as to the aerodynamics of the albatross or the humming-bird or the condor, or to study the longitudinal section of a salmon or the stresses in a torpedo or a yacht?' The reply was prompt and unhesitating. The release of genius does not depend on knowledge of the past but solely on the ability to project the mind into the future. I was silent. A year or two later the firm collapsed to the tune of several million pounds.

The Ministry of Education's recent circular on 'Liberal Education in Technical Colleges'* has stressed not only the desirability of 'liberalizing' technical studies but also the belief that the liberal element in a course depends as much on *how* subjects are taught as on *what* is taught. (I hasten to add that the curious etymological hybrid 'to liberalize', found in several places in this circular, is the creation of the Ministry of Education and enjoys little support from the large *Oxford English Dictionary*, which, however, quotes from the letters of one Lewis, in 1853, who wrote 'He is liberalizing them, instead of their torifying him'.)

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* Ministry of Education. Circular 323 (13th May 1957). *Liberal education in technical colleges.*

I believe that the 'torification' of technology, which nowadays appears to be the main objective of many pundits, in the world of education no less than of industry, would achieve only the opposite of what its protagonists seek. Those on both sides of the Atlantic who are not themselves sufficiently educated, or broadly enough educated, to marvel at the Soviet triumph in the 'spacious firmament on high', are consumed at the moment with introspective zeal as they belittle the achievements of the scientists of the West. They demand more technical training, training perhaps rather than education, in order to 'catch up'. They forget that autarchy can direct its resources in whichever direction it pleases, whilst democracy (at least in time of peace) hesitates to do so. They forget that the Great Power which has projected a satellite into outer space has failed singularly to control its political satellites here on earth. They forget, as the Pavlov and the Lysenko incidents have shown, that Soviet science is not necessarily free and deductive but controlled and dogmatic. They forget that Moscow is now sending telegrams to a forty-four-year-old Englishman, a native of Gloucester, Professor Alfred Lovell, at Jodrell Bank, Manchester, asking for news from his British-built radio-telescope as to the current orbit that their fellow-traveller, their 'sputnik', may be following—because only Manchester in the world can do today what the world may want to undertake tomorrow. They forget that the vast human resources of Russia are living, in large measure, at a standard that is as low as it is simply because the skills of torified Communist technologists have not yet been directed, with the requisite imagination and verve, to raising that standard, raising it by the application of knowledge which is freely available in the free world, and indeed largely available but not used in the U.S.S.R.

Meanwhile the satellite courses on, in its elliptical course, uttering somewhat inaudibly its plaintive messages of triumph and of woe, cheeping like a chicken that has found its way out of the hen run and would fain return to mother and family within but has not the sense to know how to set about doing so.

The Ministry's circular already mentioned and the previous one stress the importance of a good library in a technical college, underline the need to make use of it but do not make clear the extent to which the availability of a library can make more liberal the education given. But what is a liberal education?

The Fowler brothers in *Modern English Usage* define it in terms that are interesting if perhaps unusual at the present time. They write:

> 'A liberal education is neither one in which expense is not spared, nor one in which enlightened methods of teaching prevail, nor even one that instils broadmindedness; or rather it is not so called because it is any of these. It is the education designed for a gentleman (Latin *liber*, a free man), and is opposed on the one hand to technical or professional or any other special

training, and on the other to education that stops short before manhood is reached.'

(One would wish that the Fowler brothers had paid more attention to their own admonitions on double negatives.) Such a definition, for varying reasons, may generate fear and misunderstanding in the minds of the industrial student, the manufacturer, the trade unionist, the business tycoon, and even the politician (most politicians are not considered to have enjoyed the benefits of education and therefore perhaps their opinions do not count). However, the education of a free man implies something more than mere technology, something more than education for a job; it implies a continuing process, at the very least until manhood is reached; it denotes an ability to use the treasure-house of knowledge and not just an enlarged capacity to regurgitate what has been ingested; it means the right to 'think and speak and do and be' as an individual and not as a cell in some vast battery connected in series.

One of the primary objectives of a liberal education is to teach the individual to use books, to read no less than to write, to know where to find what is wanted and to enjoy finding it. All this is far more important than, for example, the present trend in certain quarters to teach people to read faster. The use of knowledge is an acquired aptitude which should be exercised, as the Minister has said, from the primary school upwards, developing in range and facility as the years go on, and continuing throughout life. The exercising of this aptitude can postpone and often banish the evil days 'when thou shalt say, I have no pleasure in them'. The library is the main tool of this kind of approach to knowledge. Its range must be broad, breadth is perhaps more important than depth, except in the most advanced and specialized institutions.

If the library is indeed to 'liberalize', its users must themselves know *how* to use it and it must itself encompass the humanities as well as the sciences, its librarian must regard 'Science' with a capital 'S' as Natural Philosophy, or perhaps (in the definition of Francis Bacon, one of the greatest of the English natural philosophers) it should be defined as 'Philosophy Speculative'.

The acquired aptitude to use books is not easy of acquisition. As I have said, it must begin in the primary school. It must become a habit or a faculty without which the individual is not educated, whatever examinations he may have passed triumphantly.

Examinations in any or all of the sciences should be carried out in libraries, or with easy access to them. The examiner should be looking not for the things which the examinee has not forgotten but for his ability to understand facts and to know where to find quickly the information that he wants but which is not at his finger-tips. The examinee should have access to books, during the examination, at least in the more advanced subjects; if he has to make too much use of them, or if he copies out what he finds in them, the examiner who knows his subject will soon detect the intellectual shortcomings of the examinee, and in any case he who makes too much use of books will not finish his paper in time.

Procedures of this kind, if they were to be generally adopted, would not only broaden the capacity of the individual but would also ensure that libraries in schools and colleges were designed physically to be fully used for reference as well as profound reading, for reference not only at examination time but also before and afterwards. I suspect that not only would liberalization be extended thereby and torification expelled but that at the same time the average technical competence of the technically trained members of our society, whether employed in industry or science or consultancy, would be formidably increased.

I remember twenty-five years ago, in my Final Schools at Oxford, being faced for the first time with two examinations of this kind. We were some six or seven candidates and had all studied all the papers set for these examinations during the past twenty-five years; with the devoted assiduity of those who nowadays put noughts and crosses on football pool coupons we had calculated—using permutations and combinations as they were meant to be used—which questions were most likely to be asked when our turn came. The two final papers were to be practical, in a laboratory, to last six hours each on two successive days, with coffee and sandwiches served in the course of them.

We arrived for the first of these final practical papers to find a brief printed note in each place instructing us to identify the biological specimens, numbered from 1 to 180, which had been set out around the laboratory and to describe each in not more than two lines. We were told that we could use the library and the museum, both of which adjoined, and that each examinee would start at a different point along the line, so that there was no overcrowding and no undue run on particular works of reference in the library or particular display-cases in the museum (a museum is an essential part of a zoologist's 'library'). The effect was salutary. Two minutes for each specimen meant that there was no time to check *each* one with the appropriate work of reference and/or with the museum and to finish the paper in its entirety. The great variety of specimens displayed, from the whole of the animal kingdom and from many geological periods as well, meant that each examinee was examined on his or her overall ability and knowledge and not on a few questions only, which might have brought luck (or the opposite) to any individual.

Shaken by this experience, and having wasted most of the midnight oil that we had respectively burned (for months past) in our efforts to know the answers to the anticipated questions, we reassembled at the appointed time the next morning, at the same laboratory, expecting to find some difficult dissection to do, perhaps, and some microscopic preparations to make and draw. Hearts sank into boots when we entered and found in every place on the benches a large galvanized washtub filled with dead gudgeon netted in the Isis or the Cherwell that morning. This time the printed examination paper said:

> 'The contents of the container may be assumed to be a typical sample of the bony fish population of one of the local rivers this morning. From an examination of them draw your own conclusions as to the freshwater biology of the river concerned. You may have free access to the library and the museum, and the laboratory staff will, within reason, provide you with any instruments that you may require and which you do not happen to have brought with you.'

I and others carried out several immaculate dissections of the gudgeon, male and female, large and small, labelled them beautifully and left them after six hours, steeped in formalin and alcohol, for the delectation of the examiner, having ourselves drawn mighty few conclusions from them. Our ineptitude, our preconceived ideas about the likelihood of the examiners requiring a dissection from us, and our inability to think quickly in liberal terms about an essentially scientific subject, cost me and most of my colleagues the difference between a first-class and a second-class degree. The examiners told us afterwards that we should have asked the laboratory staff for rulers, weighing machines and microscopes. It was the intention of the examiners that, in the six hours, we could measure and weigh sufficient of the fish in our respective washtubs to obtain a fair statistical sample of the fish population of the river, from which to deduce relevant figures as to age, sex-ratio, food-supply, diseases (if any), etc., of the fish population sampled, and then—by a similar study of stomach contents, with the help of a microscope—to identify as many as possible of the microfauna and microflora of the river, using works of reference available in the library.

I have quoted this personal experience at length because I believe that examinations of this kind are still unusual in most advanced scientific and technological fields, even though introduced then and still practised in the Home of Lost Causes. I am persuaded that this type of examination, as I have said, could do much to raise the standard of teaching as well as of acquiring knowledge in this country, and still more could train the individual to use the reservoirs of accumulated knowledge naturally, and as he will have to use them during the rest of his career. I believe you may agree with me that this type of examination, in both the theoretical and the practical fields, could go far to 'liberalize' the attitude to knowledge of both the technical teacher and the technically taught.

Yet there is more to be said. Liberalization involves a different attitude not only to the field of technology in which the student is interested but also to the surrounding fields and to the humanities. The old cliché that 'science can no longer be divided into watertight compartments' is bandied to and fro, by master and pupil, in each generation. Its truth is too obvious to need repeating. Only the presence of, and the utilization of, a good library with a good teacher can break down the barriers between one subject and another, can show the inquiring mind how biology and biochemistry are, in the ultimate, the same, and how each links up at every point with chemistry and physics in their usually accepted forms. Only a good library and a good teacher can widen the interest of the physicist or the chemist into the kindred fields of astronomy, of atomic physics, of mechanical and electrical and chemical engineering. And so on.

As I wrote those words I became conscious of the common belief that what was good enough for the men of science of a past generation would not suffice today, where only the intensity of specialization—in education and in life—can suffice to make a man great or his work of lasting quality. This view, held commonly enough, implies that the man of genius may not read detective stories, play golf, catch fish or climb mountains, in the time-honoured manner, lest he contaminate his technological pre-eminence with worldly pastimes. Then *The Sunday Times* two weeks ago came to my aid with a 'Profile' of Lord

Adrian, O.M., M.D., Fellow and Past President of the Royal Society; an anonymous journalist wrote of him:

> 'Lord Adrian, the new Vice-Chancellor of Cambridge University, is a perfect refutation of the myth that a man of science must lack something that goes to make the complete humanist. His range of interest and knowledge is remarkable: in many ways he suggests the scholar of the early Renaissance.
>
> 'From Westminster he proceeded to Trinity College, Cambridge, where after a legendary performance in the Natural Science Tripos he was elected a Fellow in 1913. As an undergraduate he fenced for the university against Oxford, and the same balance and grace of body made him a skilful rock-climber. He was also one of the amateur painters whose exhibition of Cambridge "Expressionist" art bamboozled some London critics. . . . He was elected F.R.S. in 1923, awarded the Nobel Prize for Medicine in 1932, and admitted to the Order of Merit in 1942. . . . It was Adrian who brought the newly invented thermionic valve amplifier to the study of electrical impulses in the nerve fibres. He was able to trace the conduction of nerve signals from the sense organs to the central nervous system, and "motor" impulses from there to the muscles. . . . He is, however, best known for his experiments on electrical rhythms in the brain and he put electro-encephalography, now widely used in mental hospitals, on a sound footing. He is one of the greatest living experimenters of our time. . . .'

That was written by a contemporary journalist of a contemporary English man of science, whose early education was liberal and classical, not scientific, and who has achieved world pre-eminence in several of the fields that he has made his own. Let honour be given where it is deserved, here at home, with no glances to West or East.

In this connection—and I am not asking you to be complacent—with the help of *Who's Who* I recently analysed the type of education received by the 479 Fellows of the Royal Society, listed in the Society's 1956 Year Book, who were educated in Britain. Of these, 45.5 per cent. were educated in Headmasters' Conference Schools, and 17.5 per cent. gave no details of their pre-university education. In other words, it is likely that, of the leading British scientists of today, approximately half began with some sort of a liberal education, even though the 35.1 per cent. who were at state schools or privately educated probably saw more specialization and certainly rose to the top from a numerically far larger field than those who were at schools belonging to the Headmasters' Conference. (If there be those amongst you who doubt the integrity of my arithmetic, may I hastily add that the remaining 1.9 per cent., making 100 per cent. in all, were women F.R.S.s, and women do not normally inform the editor of *Who's Who* of their age or of the manner of their education.)

In this *magnum opus*, the *Advancement of Learning*, Francis Bacon wrote *in latin* on the first page: 'For all knowledge and wonder (which is the seed of knowledge) is an impression of pleasure in itself'. The element of wonder, in other words, can lead the receptive mind on to new discoveries, pleasurably. It is implicit in this that the library, the storehouse of recorded knowledge, must help the wondering mind, the mind that—as we say nowadays—is 'consumed with curiosity', curious to seek and to find. Bacon's brand of 'Philosophy

Speculative' projects hypotheses forward from what is already known into the realms of what might be. In his *Novum Organum* he made, for example, the truly remarkable pronouncement:

> 'It is well to observe the force and effect and consequences of discoveries. These are to be seen nowhere more conspicuously than in those three which were unknown to the ancients, and of which the origin, though recent, is obscure; namely, printing, gunpowder, and the magnet. For these three have changed the whole face and state of things throughout the world; the first in literature, the second in warfare, the third in navigation; whence have followed innumerable changes; insomuch that no empire, no sect, no star seems to have exerted greater power and influence in human affairs than these mechanical inventions.'

That was written early in the seventeenth century. Except that he only saw the significance of the magnet in navigation, and not in the greater things that were to come from it 250 years later, all that he wrote then has justified the confidence of a great mind committing itself to paper far in advance of its age. That mind was trained in the Classics and the Law, but it was endowed with the divine capacity to wonder.

It is no less true today that the mind of the student must have access to the literature of wonder, on the one hand to the books in which repose the accumulated treasures of knowledge, on the other to the books that deal with life and literature and language, fiction and philosophy, prose and poesy, history and geography. For these, and many more, are the raw materials of a liberal education. The reference library must contain, too, the whole range of classical and literary works of reference, Liddell and Scott and the *Oxford English Dictionary* no less than *Chemical Abstracts* and E. S. Goodrich on the vertebrata. The works on geography, astronomy, taxonomy and ecology must be complete, and not just one or two good *political* atlases, because it is in the classification of all forms of knowledge that the different branches of learning most readily overlap and integrate.

Samuel Johnson wrote that 'Knowledge is of two kinds. We know a subject ourselves, or we know where we can find information upon it.' That apophthegm is no less true today than it was when it was written in 1775, only the knowledge of today has become more complex, more widely beyond the grasp of any human mind, less easily arrived at by intelligent deduction. This means that those who teach in school and college are charged with a greater vocational duty than ever before. That duty is less to impart knowledge than to impart the spirit of knowledge, to inspire the laggard and to be patient with the curious, to show 'where should wisdom be found and where is the place of understanding'. In all this the role of the library is clear but the desire and the facility to use it are acquired individually by slow stages, probably not in class.

In these realms of knowledge where language turns the key to new discovery and new comprehension, the library has another important part to play and a part particularly difficult and unrewarding for the librarian unless he or she be also a linguist. It is one of our national failures, a failure more particularly acute in a maritime nation of manufacturers, traders and shopkeepers, that our whole educational system is geared to the teaching of French, which in its turn is so badly taught that the Englishman who can speak and write French well (unless he has lived for long periods in France) barely exists. French is a great and beautiful language with a mighty literature and an unrivalled cultural tradition. But it is not any more the language of diplomacy; English has usurped its place in that realm. It is not the language of science; English, German and Russian are struggling for that honour. It is certainly not the language of business and commerce; after English, the European tongue most used in the trade of the world is probably Spanish, spoken as first language by some 150 million people—three times the number of those who speak the fair idiom of France. And lastly, French is no longer the second language which all the world most wants to learn or indeed is learning.

As the late Professor Allison Peers of Liverpool so often stressed, British salesmanship, and to a considerable extent British technology, need to be reinforced by a national command of many languages. It would be sensible for one school to specialize in French as a second language, another in German, another in Spanish, Russian, Portuguese or Hindustani, as the case might be. The great obstacle is the shortage of teachers qualified to teach anything except French (and even they are often lacking in fluency, and pronunciation, and linguistic *savoir faire*). To the technologist, the ability to browse in foreign books and journals is an important one; the acquisition of that ability involves a liberal and not a technical education; its use demands the facilities of a good library.

Books of the type that teach German for scientists in five easy lessons are anathema; no man can learn the German verbs in five lessons and scientific German is unintelligible without a working knowledge of the verbs, even if it be intelligible at all. Esperanto, Ido, Volapük and Hogben's scientific Interglossa have all failed; those who have troubled to learn them find to their cost that there is little or no use that can be made of them, because it takes two to make a conversation and the other party has probably learned English anyway. Basic English fails for reasons of international jealousy and because no Englishman or American can ever *speak* it. The only solution to the problem of the Tower of Babel is for every man or woman of culture and learning to master a second language, and to use it whenever opportunity presents and to make opportunities for its use. Here, too, the library, and particularly the lending library, has the key part to play; and in playing that part it is advancing the cause of liberal education in a technological setting.

And the library has one yet more important task to fulfil. The best that a liberal education can offer is the gift of imagination, the capacity to build castles in Spain and weave tissues of fantasy. Without the flights of roaming fancy, no great discovery is ever made, no achievement can be visualized in the mind's eye before it is designed, there is no spice in life. Portia sang:

Tell me, where is fancy bred
Or in the heart, or in the head?
How begot, how nourished?
  Reply, reply.
It is engender'd in the eyes,
With gazing fed; and fancy dies
In the cradle where it lies.

It is perhaps the greatest of all the dangers that surround Britain today, as they have always surrounded her, that fancy may die, cosseted in a comfortable cradle of inertia, surfeited with soft words at committees and conferences. Fancy runs free in the mind of the individual and nowhere else; the collective mind of the committee is no mind, it is but the lowest common denominator of corporate consensus. Fancy runs free in the great literature of the world, created by great individual minds, in poetry and drama and fiction and prose. The fairy-tale and the *Essays of Elia*, Hans Andersen and 'The Ancient Mariner', 'Kubla Khan' and *Paradise Lost*, Homer, Sophocles, Virgil, Goethe, Schiller, Voltaire, Molière, Maupassant, Dante, Cervantes, Spencer, Milton, Longfellow and Walt Whitman are all part of a great heritage of genius, of minds exploring the realms of fancy, which become closed books, in fact as well as in metaphor, to those whose minds are closed to them. The library is the tool, as the Ministry of Education says 'the workshop', which can unlock the door to those who would open it.

For Britain is lost if the pursuit of technological supremacy causes her to forget the realms of fancy, the flights of imagination, the inspiration of leadership, the world of ideas in the which in the past her greatness has been found.

For, in the realms of technology too, it is the flights of imagination emergent from an advanced level of competence that achieve the impossible. Technical competence of itself is sterile. Archimedes in his bath; Newton in the orchard; Alexander Fleming in his laboratory; these men, and others like them, projected the recorded knowledge of their day forward into the realms of creative imagination as men of vision and not as technologists.

The case for liberal education, and with it for its natural corollary the comprehensive library, rests most firmly on the tenet that technology is not, of itself, enough. In his epilogue to *St. Joan*, Bernard Shaw wrote: 'Must then a Christ perish in torment in every age to save those that have no imagination?'

A TECHNICAL LIBRARY SERVICE

BY S. T. BROAD, M.A.

Education Officer for Hertfordshire

AFTER such an inspiring address by Sir Edward Boyle and the brilliant lecture by Lord Verulam I am really left rather breathless and I expect your capacity for taking any more is almost negligible.

I think it is important, because you are covering this very fascinating subject, to touch on some of the points which will arise when consideration of the technical library service comes forward.

Obviously one asks the question: why a technical library service? There are two aspects of the need. One is dissemination of information and the other is the creation of the right type of receptiveness. I believe that whatever machinery we introduce for the one will fail completely unless the other is there too. We have got to deal with the scientist talking to the scientist and the scientist talking to the layman. I am told that the scientist does not always understand his fellow scientist and it is certainly true that the layman does not. We have to get over to the layman the great wealth of information that is available today and has been in the past but has been lost. When Lord Verulam was talking of modern inventions my mind went back to the fact that both in China and in Africa there were sources of information available, for example, in medicine and in biological study which were obviously lost to us because we have had no proper information service over thousands of years.

These are matters which make it incredibly relevant that the layman shall be interested in these problems. The problem of receptiveness is one which the whole of our educational system is attempting to tackle. We might well ask whether it is not too late to attempt it when the last few years of the formal educational period are under way. I do not think it is. I think that you may well achieve something in a technical library and in the work in our technical colleges which perhaps has been neglected because of large classes and other problems in the earlier stages of education. The important thing is that we should have inquiring and receptive minds at the age when people leave the formal educational field. Sir Edward Boyle, Lord Verulam, and the Circular 322, all emphasized, though they expressed it more tactfully, how important it is that the student's mind should not be dulled by the reiteration of lectures which he could have read with far more interest had he had access to the right kind of books. The emphasis in the Circulars and in this morning's speeches was on the vital importance of a new approach to education at what I regard as the adolescent level. It is vital because otherwise we shall lose what is the most valuable part of any education, a receptive and inquiring mind.

I am passing on now to try to answer the question as to how we are to achieve this dissemination of information and this receptiveness of mind. In Hertfordshire we have adopted one particular solution but I am not suggesting in any way that there are not many, many other solutions—there obviously are—but I want to tell you first of all why we have adopted the particular technical library service that we have, because it may help other people to decide against it or to decide that it might work well elsewhere.

We have a structure of further education in Hertfordshire which consists of three important technical colleges (recruiting at the age of 18 and not earlier), and feeder colleges (colleges of further education) which are scattered around in the main centres of population feeding the three technical colleges. We shall ultimately have a dozen or so such feeder colleges but at the moment we have eight, although not all of them are in proper buildings. The value of those institutions suggests to us that their connection with the student and their contact with industry—a vital part of any technical college's work—should produce both the opportunity of getting at the receptiveness of the student and the opportunity of getting at the receptiveness of the firms and of the members of the staffs of the firms, who would surely be in close contact with the colleges. It would also give us the opportunity of following some reasonable pattern throughout the county, so that a student moving from one college to another would quickly find himself at home.

We also have an excellent county library which was already linked with all the specialist libraries—of which there are many in Hertfordshire. There are firms whose status in their particular industry has ensured that their library facilities are almost the best for their limited range. So from these sources we had the possibility of creating a unified whole. It obviously cannot be entirely self-sufficient because there are other resources that the county library service can call upon and which the specialist libraries call upon, but we felt that it was essential to integrate our services completely. There may be some who will say that this has disadvantages from the viewpoint of classification and cataloguing. We believed that the integration of the whole was more valuable in itself than these disadvantages. We chose that particular method because it afforded a simple and direct approach and was also comprehensive.

We felt that a comprehensive service of this kind had to be backed up all the time by real aggressiveness in ensuring that students made full use of the service. I think we were convinced of it before; but you may remember that at your conference, I think it was, just over a year ago Dr. Martindale mentioned that thirty technical periodicals, journals, and magazines had been placed, sealed, in the hands of various firms and when they were taken in at the end of a suitable period it was found that the bulk of the seals were unopened. It was clear that something really aggressive was needed to put over to our students that the tools were at their hands but that they had to learn to use them then, and in after life. So we began to examine what we should do to ensure receptiveness.

This meant courses for students; and I can only give you the brief headlines of a comprehensive course which Mr. Wright, our technical librarian at Hatfield, has introduced. It covers all the basic sources of information, first of all describing the information available in libraries and then trying to show them the best method of selecting the information. In other words, the students are shown the use of libraries, catalogues, classification, indexing and so on which many students going to a technical college certainly would not know. It is vital that if these tools are available the method of using them should be taught. The course goes on to give a whole survey of the various organizations responsible for this information. That survey starts with the Government Departments which are a wide source of information, and goes on to the research institutions, trade journals, periodicals, technical associations, and even newspapers. All these fields are available but, of course, the student has to know how to go about tackling the problem of finding the information he requires. The students are told about specialist information, statistics and so on, the Patent Office and the sources of information there, and other sources of information such as directories and even telephone directories.

On one occasion when I heard Lord Verulam giving an address I remember that he said, 'Have you ever watched people looking for a number in the telephone directory?' I did and I found it really incredible how slowly people found their number because they did not know how to go about it. It may seem simple but those are the fundamental tools of our trade and it is vital that we should know how to use them.

May I go on to suggest that there are other fields in which this course could be strengthened. I mean this in the kindest possible way but I would ask you to look at the state of books in our great libraries. I am not suggesting that the libraries are not looking after the books, but if you look at the books you will learn that only a very small proportion of people in this country even know how to turn over the pages of a book. You will find a number of books with broken backs and with their leaves turned down. All this may seem very elementary but it is essential to my mind that we should have a proper respect for our tools and in that direction we have, as a nation, much to learn.

In order to get receptiveness in students there is no doubt that much can be done by asking them to learn and practise the proper presentation of their material in written form and in speech. Here again the student must know, before he is going to be of real value to the world, not only where to find his material but how to communicate it, because the problem of communication is allied to this whole problem of the dissemination of information.

We do think that co-operation with all the available library sources in an area is vital. It will be of interest to you to know, I am sure, that before we co-ordinated the cataloguing of libraries it happened that two very distinguished firms side by side in our county were seeking information from books and pamphlets which, unknown to them, were in fact available in the library next door.

Then there was another reason for our desire to co-ordinate the use of the technical colleges and our library services. We felt that at our colleges we had men and women with a great fund of information which no one librarian could have, and that by co-ordination with the libraries they would be able to turn their minds to some of the questions which we expected would be asked of the technical library service.

May I just turn to what we hope to do, because obviously it is one thing to have ideas and set up a co-ordinated library system and quite another thing to make it of value to industry. We want the young people whom we hope will be going out qualified and with receptive minds to be able, when they get into industry, to continue their interest and keep up to date. All these things have been said this morning but it is worth repeating that it is hoped that when the students are faced with problems they will look to the technical colleges as their sources of information and will turn to them for continued education throughout their lives. In that way I am sure we shall have done something for industry which at the moment industry is not perhaps fully aware that it lacks.

We hope, among other things, to get continuous contact with the firms because we shall have liaison through the students. We hope to keep them up to date. The haphazard circulation of information—and what a vast amount of information there is available of titles of periodicals and books which are coming out daily—would be quite beyond the average firm to deal with; we must therefore have a selective method whereby we can offer firms a choice of subject headings in which they would receive information services. We could then circulate on cards, for permanent use, the information they would require and which they could then file and have handy for continuous reference. We hoped that this would bring close consultation and a form of service which would be a most valuable one. It would bring about a personal contact between the staff of the college and the firms, and a knowledge of their needs would bring out all kinds of problems which would lead to discussion and searches for information. The small firm certainly could not undertake to provide itself with such a service. But a college library would undertake it, not because the small firm only required it but because it would be a most valuable addition to the volume of useful information.

There are various techniques for applying this information on the market and they will be discussed. It is possible that the colleges of further education where the work is not so advanced will become sources of information for trade names, for example. We can also provide sources of information for tracking down machinery spare parts. That source of information is not a difficult one but it needs careful compilation and must be available to a large number of people. It may also, of course, widen the experience and knowledge of the student who may be brought into touch with it.

I should like to finish by telling you a story which is very pertinent at this moment. You may have heard of the rabbit who was terrified and worried by continuously being chased by humans and other animals and in his disgust with life he went to a wise owl and asked him what to do. The owl said, 'You really want to become a weasel.' The rabbit was delighted and went away happy until he realized that he did not know how to become a weasel; so he went back to the owl and said, 'How do I become a weasel?' Then that wise administrator the owl said, 'I only deal with matters of policy. Matters of detail you must work out for yourself.'

DISCUSSION

DR. C. G. LYONS (Flintshire Technical College) reported that his college had inaugurated a technical library service for the industries of the county of Flint. Industry had contributed generously and the service could be one of immense value to smaller firms with no library of their own.

A committee representative of the subscribing industries and the college had been formed to allocate the money which had been donated. The firms concerned had been circularized several times, giving them details of the reference books purchased and other library additions, but the college had been disappointed in the lack of response from them. Very few inquiries had been received in the ensuing six months, due no doubt to the fact that local industry had never had a technical library service in the county and therefore had not acquired the habit of seeking outside help when information was required.

Dr. Lyons said he would be glad to know what Mr. Broad's experience had been and if he could suggest what should be done next to persuade industry to use the facilities which were now available.

MR. BROAD said that the speaker had really answered his own question and had convinced him of the truth of what he had said earlier, namely, that the dissemination of information was one problem and the receptive mind was another. That had to be stimulated and it was a longish business. It was only when generations of students had gone out that a good step forward would be made through their proper understanding of the sources of information. He believed that the line his county hoped to take of supplying a card information service of the latest periodicals was a good one. The fact that they would have available in the near future micro-readers and sufficient microfilm would make it possible for the interested person to have immediately available the information he wanted.

They hoped in that way to interest people and show them that there was a live organization in existence and it would also ensure at least one contact with each firm. There would have to be someone in every firm who had an inkling of what it was all about and the great value of such a service was that it involved personal contact. It would perhaps be an expensive service in one sense. There must be personal contact and that was expensive. Nevertheless, because the college itself regarded its technical library service as part of its life and existence there would be many people on the staff who would make that contact. He hoped that before long many of the staff would be sufficiently well informed themselves to take over what to a qualified librarian would be an impossible burden so that a greater and wider interest could be created.

DR. A. E WALES (Burnley Municipal College) said that he would like to ask a question. Did Mr. Broad consider—or perhaps the question should be addressed to Lord Verulam—that the next step in the library service in technical colleges should be to encourage the students to build their own library for themselves? Personally he thought it a legitimate extension of what the speakers had been talking about. If so, what books would the speakers consider essential for a liberal education? Should the student have help in buying the essential books and how should the student's taste be developed towards building up his own library?

LORD VERULAM said that he was flabbergasted that that question should have arisen out of his remarks. He was sure that it was an admirable thing for students to build their own library but he was also sure that they would need some guidance as to what kind of bricks were available to build with and an inspiring teacher or librarian would surely always have a place in assisting and guiding them in their choice.

When he had said that the contents of a library should in most cases be broad rather than deep he had meant in another way exactly what he had just said. When it came to building a library deep in some specialized subject he presumed that the most skilled advice possible was required. When it came to building a library broad one wanted it to be in a sense comprehensive in that it covered as many facets of knowledge as possible because it was for the use of people whose minds might be following out an idea, or might be curious or wondering or inspired in many different directions, and one could not surely cater in a fixed way for everything. But when a librarian who had the gift of teaching saw that perhaps only one mind was going in a particular direction he could help the student concerned to build the library in that particular direction, or at least make him think he was building it in that direction.

PROFESSOR R. S. HUTTON said that having taken a keen interest in the subject for fifty-five years he had appreciated being present to hear Lord Verulam's stimulating address. Never had he heard anything so helpful to the cause they had at heart.

He remembered on his first visit to the United States in 1902 being very impressed with the library-mindedness of the American people. As a young man teaching in the University of Manchester he had been handicapped by the limited local supply of scientific and technical literature. He and some of his friends got active and with the help of the Chamber of Commerce and the *Manchester Guardian* they persuaded the Corporation to send a deputation to the United States to see such libraries as the New York Public Library and the John Crerar Library in Chicago. This ultimately resulted in Manchester obtaining a good municipal scientific and technical library.

Twenty years later, as Director of the Non-ferrous Metals Research Association, he realized that one of their functions was to supply to their members information from world-wide sources and they had established a library and information bureau.

He and his friends were so impressed with the national importance of information services that in 1924 they had started Aslib itself. It was a great satisfaction to him to be present and to see how Aslib and its mission had spread

The Aslib Directory, published in 1928, was a classic and its intention was to help anyone to find sources of information in fields outside his own special subject. He understood that a new up-to-date edition would shortly be published by Aslib.

To come back to America, one early development which had impressed him was the widespread provision of courses for teaching students how to use a library. He remembered that one of the librarians at the University of California had tried an experiment—perhaps it would have been impossible in England—of inviting the university staff to sit for an examination, which consisted of several papers to test their ability to find information and indicate the gazetteer, encyclopædia, or dictionary which might serve as a guide. Scarcely any of the staff achieved more than 50 per cent of the possible marks but they were so shocked that they invited their library to start a course.*

In conclusion, Professor Hutton wanted to emphasize the potential educational function of the technical college library in broadening the outlook and interests of its staff and students; for which purpose the library should contain reference and other books far beyond the narrow requirements of its scientific and technical courses.

Mr. A. R. N. Roberts (Imperial Chemical Industries Ltd.) said he was sure that they would all agree with Lord Verulam about the liberal mind creating as well as applying new knowledge. He felt sure that Lord Verulam would agree that it was characteristic of the liberal mind that it challenged. His own experience of training in industry was that while one hundred people would willingly study it was very difficult to get one who would willingly challenge, particularly perhaps if he was the loyal servant of a large company whose customary procedure appeared to him to have dropped from heaven.

He thought that libraries could be a real help to the student to continue that challenging habit of mind which he should have acquired at universities and which was so quickly lost. Libraries could help by stocking not only worthy volumes but volumes which might not, at first sight, be considered worthy—the provocative and the challenging as well as the solid and respectable

Dr. J. E. Richardson (The Polytechnic) said that they had heard something of the need for technical colleges to furnish in their libraries a service for industry and he thought that that was a very valuable thing People in colleges also had to be kept up to date and he wondered whether the experience he had had at the National College of Horology might be of interest and value.

One of the larger firms associated with that college had its own library service and their librarian used monthly or periodically to issue round the works to the various people concerned a digest of recent inventions, papers and documents—anything bearing on the work of the departments—and a copy had been sent to him at the college He in turn had given it to the librarian and on a number of occasions it had proved most valuable because work was being done and devices were coming into being of which they knew nothing and it would have taken up a great deal of time to find out all about them. With the help of the digest they had been able to put various members of the staff in touch with the original paper or book, and to take some of that information into the classes concerned.

Where firms had their own libraries and were already in the habit of sending round their departments a digest of recent information he would plead that they should also send a copy to the local technical colleges and possibly make it available to technical colleges generally.

Mr. Broad said that Dr Richardson had made a very important point indeed. They already had that co-operation in a number of fields in Hertfordshire and were able, of course, from that source to build up a service, so to speak, of particular information. It would be absurd, of course, to supply that particular firm with the information which they were so much more knowledgeable about. Every firm had its own specialized interest but there were a large number of associated interests and what they hoped to do was to get every firm to inform them of those associated interests so that they in turn could keep them informed of the best or most interesting publications which were received from the specialists themselves. They could make use of that information to help the firms in their ancillary interests.

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* Peyton Hurt. 'Teaching the use of libraries', *Report of the proceedings of the thirteenth conference*, Aslib, 1936, pp. 24–8

DR. W. A. J. CHAPMAN (Hatfield Technical College) added that their scheme included a tutor librarian who would be teaching for about half the week and preparing a library publication of information during the remainder of his time.

DR. EDWARDS (Bradford Technical College) said that he would like to give some of his reactions to Lord Verulam's inspiring address. Whitehead once said that all technical education should be a liberal education and probably he had in mind that education should be imbued with the spirit of humanity more than that it should have a sprinkling of the humanities although personally he had no doubt that the latter could contribute to the former. He had in mind the problems there were in the field of liberalizing. Thinking of education in terms of humanity, could he comment that they had often exported to the backward regions of the world people trained in the classics who had done a good job of administration but who had left the people in the same state of poverty as they had found them? At the present time they were exporting technicians who were doing something on the basis of humanity.

One of the present problems was that the very tools, in the form of books, which were needed in the very heart of science education itself were just not there. During his undergraduate career he could think of only two or three manuscripts written by scientists in a liberal and philosophical, let alone a humane, way. There were people who could write in the style of Darwin or in the grand manner of Bacon but did not find the time to do it and when teachers thought of introducing students to books in their own subjects which gave the human side they found themselves short of material. That was something to which the scientific profession must address itself if the need was to be supplied. The need was for books in the field of the sciences themselves written in a philosophical and liberal way, and books about science and its implications in the modern world which were sufficiently expert and up to date to command the respect of scientists but written in a way which could be understood by the layman. There was a shortage of such books which was apparent when it came to filling a library with books and the technical profession should give some time to make good that shortage.

LORD VERULAM said that in the course of a few minutes he had been given an impossible series of comments to reply to and he had been trying to sort out the ones which Mr. Broad should deal with and the ones which he himself should touch upon.

The question of the library-mindedness in the United States was, he thought, part of the manifestation of youth which one saw often in so many things in the United States and which was part of the implicit belief that there was something to be found out, and that they must know how and where to find it. He had met that very much in factories, but had feared that because he had come from another land, it was assumed that he had something new to tell them, which was embarrassing. He thought it led to the danger that too many Americans wrote down in too many words what they had not time to think about. That made the problems of the American librarian very great and of the English student who was inspired to try to read American technical journals even greater.

He had been very happy to hear a little more about the history of Manchester and its library. He went there on business once a month and, after arriving in the grim fastnesses London Road at 6 a.m. and having breakfast in a horrible hotel, he then retired to the Central Library with a list of things he had not been able to find answers to elsewhere. It was a very good library indeed for reference and international journals. He congratulated all concerned on it.

That led to the suggestion that what was required was a course on the use of knowledge. He believed that every school from primary upwards should be teaching how to use knowledge, and that was far more than knowing how to look up J. Jones in a telephone directory, which was an extraordinarily difficult thing to do.

Mr. Roberts of ICI had followed on very appropriately with the idea that the library must make it possible to use knowledge. At a school in Dorset with which he had been associated for a number of years the headmaster operates what he calls 'the modified Dalton Plan'. He knew that the term 'Dalton Plan' struck terror into everyone but the modified Dalton Plan was much more harmless and it had the advantage that the boys, and there was another school for girls, did a large part of their work in their own time on what the universities called the tutorial system. It was a school type of tutorial where the master was invigilating in the library and gave help when it was asked for but not otherwise and guided to the right shelf or newspaper when guidance was required. It seemed to him that the library gave an opportunity for building up some expertise of that kind and for teaching those who were there to use the knowledge available. That was something which he thought could be taught informally and not in a class with people sitting in rows.

Dr. Richardson had mentioned horology. It always seemed to him that in that connection it was worth mentioning the very advanced manner of classifying developments which the Swiss watch industry had reached in that field. They published three different journals, put out by three different groups, containing all the advances and developments relevant to watch making, and they were published, he thought, in four languages. Although to the layman each journal was too formidable to be worth looking at, he thought their publication must have something to do with the fact that the Swiss watch industry was, of all industries, the biggest continual dollar earner in Europe. It was done by that means. He believed that only six of the 2,000 firms employed more than 300 people and that the average was ten people employed.

Lastly, partly from Dr. Edwards and partly from what was said subsequently, was education to be liberal with a little bit of technology pepper-potted on top of it or was technology to be served up with a liberal sauce? He did not think a general answer was possible or desirable. He did not think they should ask professors to write in the style of Darwin or Bacon or Churchill or anyone else but in recent years in Britain and in the United States there had been a growing tendency for great books to appear about the sciences, written in language that was at least decent, intelligent, and well put together and in a style intelligible to the layman and not unenjoyable to the professional. He would have thought that both before the war and now to some extent people like Paul de Kruif, J. B. S. Haldane, Eddington, and Jeans, were putting out literature, in each case a best seller, but which was part of that wider understanding that free men and women ought to have access to, whatever their chosen work of life, if they wanted to have an understanding of what was going on round them in the physical as well as in the mental plane.

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All the above items may be borrowed from Aslib Library, except those marked with an asterisk. Most of these are available for consultation in the Library, apart from a few for which locations in other libraries can be given by the Librarian.

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Morris, L. H. B.
Napier, Miss I. H.
Wiley, Professor R. H.
Williams, Dr. D.

ASLIB INFORMATION

ASLIB CALENDAR 1958

JANUARY

THURSDAYS 2nd, 9th, 16th. Course on handling Soviet and east European material, lectures 5, 6, 7.

TUESDAY 7th–THURSDAY 9th. Course on aeronautical documentation.

THURSDAY 16th. Furniture Group meeting. See paragraph below.

WEDNESDAY 22nd. Economics Group meeting. London Stock Exchange, 2 p.m.

WEDNESDAY 29th. Economics Group meeting. Ministry of Agriculture Library, 6 p.m.

FEBRUARY

WEDNESDAY 12th. Economics Group meeting. British Institute of Management, time to be announced.

WEDNESDAY 19th. Economics Group meeting. Bank of London and South America, 5.30 p.m.

WEDNESDAY 26th. Economics Group meeting. British Aluminium Co., Intelligence Department, 5.45 p.m.

SEPTEMBER

FRIDAY 5th–MONDAY 8th. Annual Conference. Nottingham University.

Sir Alexander Todd honoured

The Swedish Royal Academy of Science has awarded the Nobel prize for chemistry to Professor Sir Alexander Todd, F.R.S., a Vice-President of Aslib, for his work on nucleotides and nucleotide enzymes. Sir Alexander is Professor of Organic Chemistry at the University of Cambridge, Chairman of H.M. Advisory Council on Scientific Policy, and Managing Trustee of the Nuffield Foundation. We offer him our congratulations on this outstanding tribute to his work.

Visit to Imperial Chemical Industries

Some fifty Aslib members visited the Intelligence Department of Imperial Chemical Industries Ltd., Millbank on 13th November. They heard an account of the work of the Department from Mr. A. R. Smith; Mr. S. Stevens, who is in charge of the technical commercial section; and Mr. Handcock, who is in charge of the economics and statistics section. After a brief discussion members then split up to visit the library and the technical index. The total staff of the Department is over sixty and it is thus probably the largest department of its kind in the country.

Midlands Branch

The new season of meetings of the branch opened with a paper on the language problem of science read by Dr. J. Horne of Birmingham University. Dr. Horne has had considerable experience in the teaching of foreign languages to scientists and has produced many translations of scientific material. His paper covered many aspects of the subject including the possible expansion of existing synthetic international languages so that they might be used for scientific purposes, the use of mechanical translators, and the wider application of the intensive teaching methods which were developed during the last war for training interpreters and which are now being used at many centres on the Continent. Dr. Horne suggested that the language problem could be overcome if one of the major languages were to be adopted by international agreement as the *lingua franca* of science. He favoured English for this purpose in view of the fact that already it was the most widely understood language and that more scientific literature was published in English than in any other single language.

Scottish Branch

The first meeting of the season was held in Dundee on Thursday 7th November. In the morning members visited the Jute Section of the Dundee Industrial Museum, where the various exhibits were explained by Mr. Marshall, Public Relations Officer of the Jute Trade Federal Council. After lunch the meeting adjourned to the library and laboratories of the British Jute Trade Research Association, where members were shown many interesting facets of research work, including investigations into waterproofing and fireproofing of the fibre.

A meeting of some forty industrialists from the Dundee area took place in the Queen's Hotel later the same afternoon. It was sponsored jointly by Aslib and the D.S.I.R. (represented by Mr. E. Martindale). The chairman was Mr. Rennie Stewart, Chairman of the Dundee Local Productivity Committee, and the Director of Aslib gave a short talk on the work of Aslib and its many services to industry.

Furniture Group

The next meeting of the Group will take place at 2.15 p.m. on Thursday 16th January at Hoxton Central Library, Pitfield Street, London, N.1. Members will then visit the factories and showrooms of Messrs. Beresford & Hicks, furniture manufacturers. The party is restricted to fifteen and any member wishing to join should get in touch immediately with the Group Secretary, Mrs. Irene Wagner, 2–4 Dalmeny Avenue, London, N.7. Telephone: North 5481.

Conference on Library Services in Technical Colleges

Some 300 delegates—mostly principals of technical colleges, chairmen and directors of education of local education authorities, and technical directors or training officers of industrial companies from many parts of the country—attended this Aslib conference held in the Connaught Rooms, London, on 30th October. The conference was opened by Sir Edward Boyle, Parliamentary Secretary to the Ministry of Education. Papers given at the morning session by Sir Edward Boyle, the Earl of Verulam, and Mr. S. T. Broad are published in pages 361–379. Those by Dr. J. Topping and Mr. P. P. Love, presented in the afternoon, will be included in the January 1958 issue.

Fulbright Travel Grants 1958–59

These grants are available to students, lecturers, and senior research workers in the United Kingdom to go to the United States for academic or educational purposes. Students must hold at least a good second-class degree or its equivalent. Grants to students are available for the academic year commencing September 1958 and are valid for a period of up to three years but must be renewed annually.

In awarding grants to research workers and lecturers, preference will be given to those who intend to spend a full academic year in the United States. Grants may be extended up to a period of two years subject to satisfactory appointments.

All applicants must hold a guarantee of adequate financial support in dollars for the period of their stay. The closing dates for application are 15th March 1958 for those intending to travel between 1st June and 15th August 1958, and 1st June for those intending to travel between 16th August 1958 and 1st April 1959. Those wishing to apply are first asked to fill in a record card and full application forms are sent only when candidates indicate that their plans are complete, which must be before the closing date. Application should be made to the United States Educational Commission in the United Kingdom, 71 South Audley Street, London, W.1.

Patent Office Library

The Patent Office Library has just issued a list of its current periodicals. It includes sets of patent specifications and patent and trade mark journals as well as the scientific and technical periodicals in the Library's collection. The list, which includes over 4,500 titles, can be obtained from Her Majesty's Stationery Office, York House, Kingsway, London, W.C.2, or from the Sales Branch Counter of the Patent Office or any bookseller, price 7*s.* 6*d.*

Ingeniøren, international edition

Danish Technical Press have announced the publication of an international edition of *Ingeniøren* (The Engineer) to be printed in English. The new edition will be published quarterly and contain selected original papers and reports of works and problems dealt with by Danish engineers and scientists. The subscription rate is D. crowns 30 per annum. Inquiries should be addressed to Danish Technical Press (Teknisk Forlag), Vester Farimagsgade 31, Copenhagen V, Denmark.

New Bibliographical Services

The Bureau of Technical Information of Iota Services Ltd. announces that it has started a new series of bibliographies to be published monthly. It is intended to include books, technical reports, patents, and films, as well as information concerning conferences, meetings, and courses, and details of available preprints and trade literature. The address is Iota Services Ltd., The Bureau of Technical Information, 38 Farringdon Street, London, E.C.4.

Peaceful Uses of Atomic Energy—Papers

Individual copies of most of the papers presented at the International Conference on the Peaceful Uses of Atomic Energy (Geneva 1955) are still available. These may be ordered at 1*s.* 9*d.* per copy post free, through H.M. Stationery Office, P.O. Box 569, London, S.E.1. The orders will be transmitted to the European Office of the United Nations at Geneva and the papers posted direct to the purchaser. Payment should accompany the orders. Orders should indicate the exact titles and document numbers of the papers required. This information is contained in volume 16 of *The Peaceful Uses of Atomic Energy*, which can be consulted in a number of public libraries or at the United Nations Information Centre, 14–15 Stratford Place, London, W.1.

MEMBERS' ADVERTISEMENTS

MANUSCRIPTS—books, theses, articles—typed with affectionate care. Research intelligently prepared. American and English only. Work called for and delivered within reasonable distance. B. M. Collins, 77 Walm Lane, Willesden Green, London, N.W.2.

Situations vacant

Applications are invited from suitably qualified persons for the position of ASSISTANT LIBRARIAN at the College of Aeronautics. Salary in range £425 to £625 p.a. rising to £750 p.a., according to age and experience. Contributory superannuation scheme. Applications, giving full particulars of qualifications and experience, and quoting the names of three referees, should be addressed to the Recorder, The College of Aeronautics, Cranfield, Bletchley, Bucks.

THE IRON AND STEEL INSTITUTE requires a young man or woman with scientific or technical qualifications. He or she will work as an assistant to the Information Officer and will have an opportunity to train in an important and expanding field which combines science and an information service. An interest in metallurgy and in the collection and provision of scientific and technical information is essential. A knowledge of one foreign language and practical experience in metallurgical industry or research would be useful. A five-day week is customary, a pensions scheme is in operation and luncheon vouchers are supplied. Salary will be according to qualifications and experience. Apply in writing to The Secretary, The Iron & Steel Institute, 4 Grosvenor Gardens, London, S.W.1.

TRANSLATOR (Technical). Simon-Carves Ltd., specializing in the design and construction of heavy industrial plant, have a vacancy in the Information Section of their Research Department for a full-time Translator-Abstractor of A.I.L. Level. Candidates must be able to prepare abstracts from and translate Russian technical and scientific literature, the material being primarily concerned with chemical engineering. Previous experience of this type of work is desirable. The post is permanent and pensionable. Salary in accordance with qualifications and experience. Send brief, relevant details to Staff and Training Division, Simon-Carves Ltd., Cheadle Heath, Stockport, Cheshire, quoting reference Aslib 1.

Situation required

LIBRARIAN, chartered, graduate, experience in government, special, medical libraries, indexes, seeks appointment in or near London. Box No. 13, Aslib, 4 Palace Gate, London, W.8.

Wanted

Aslib Proceedings, vol. 8, no. 1. Offers to the Librarian, Crosse & Blackwell Ltd., Crimscott Street, S.E.1.

One copy of *Endeavour*, vol. XV, no. 59, July 1956. Offers to the Librarian, Nash & Thompson Ltd., Oakcroft Road, Chessington, Surrey.

For disposal

The Laboratory (Fisher Scientific Company, Pittsburgh, U.S.A.), vol. 17, no. 1–vol. 24, no. 2. *British Science News*, no. 1, 1949–no. 27/28, Jan./Feb. 1950. *Engng. Boiler Ho. Rev.*, Jan. 1949, vol. 64, no. 1–Dec. 1950. *E.D.A. Bull.*, Jan. 1947, no. 132–Dec. 1955. *G.E.C.J.*, Aug. 1933, vol. 4, no. 3–Oct. 1955, no. 4 (some missing).

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